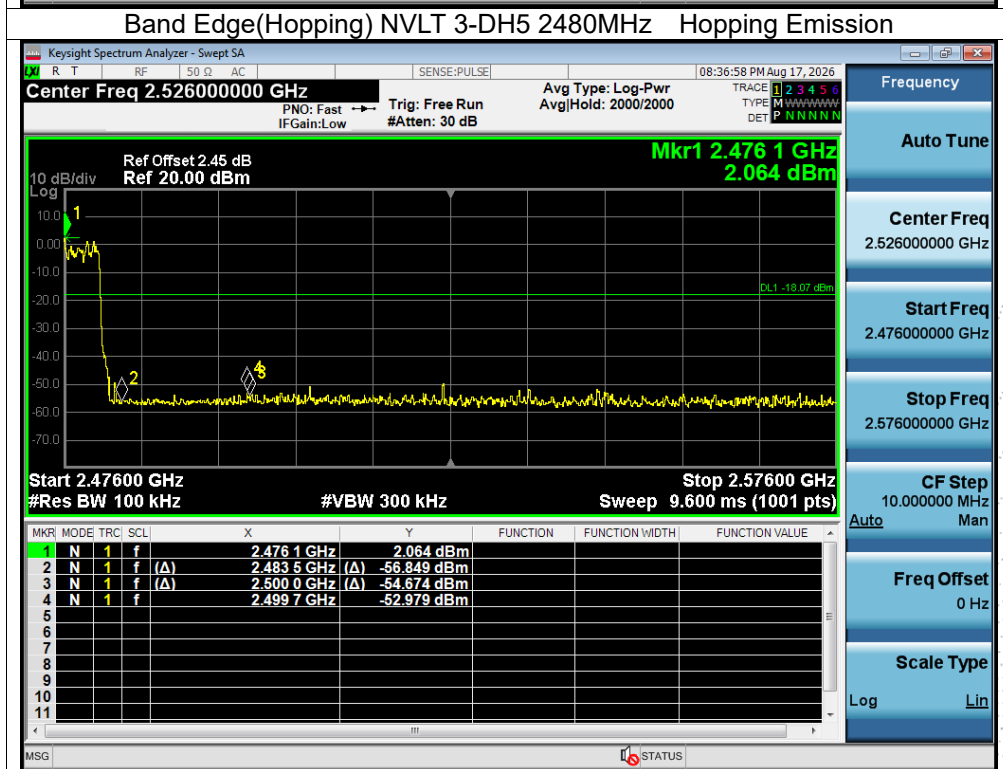
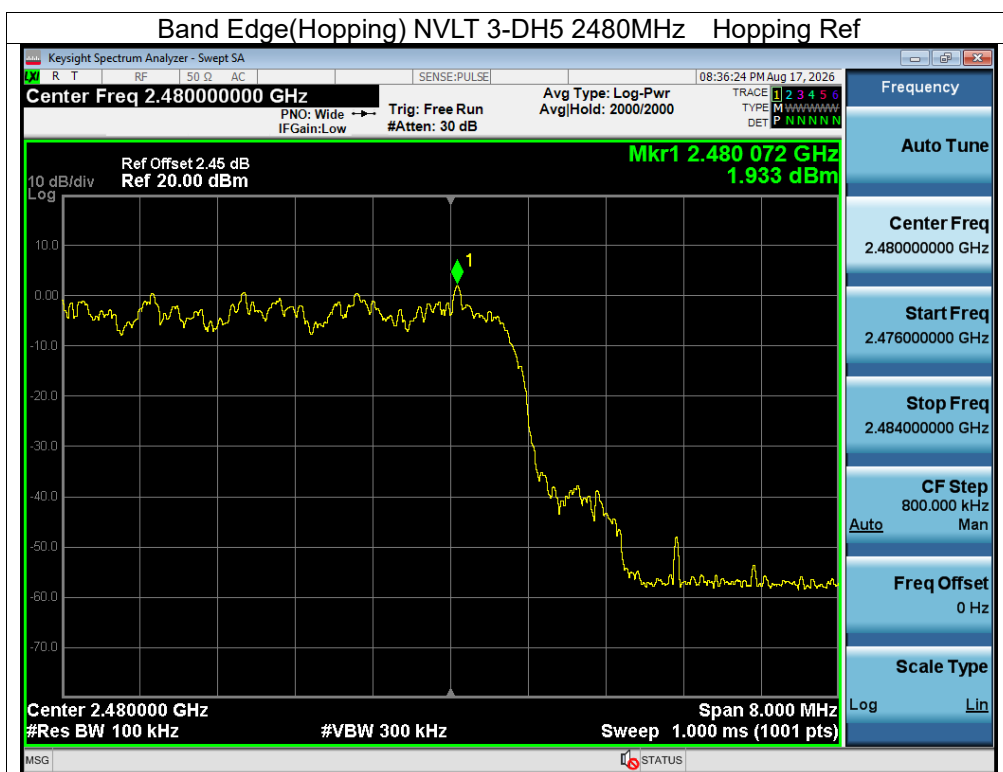
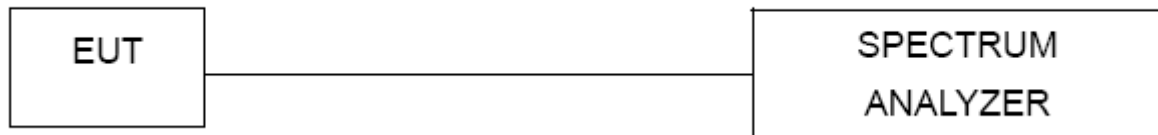




10. 20 dB Bandwidth

10.1 Block Diagram Of Test Setup



10.2 Limit

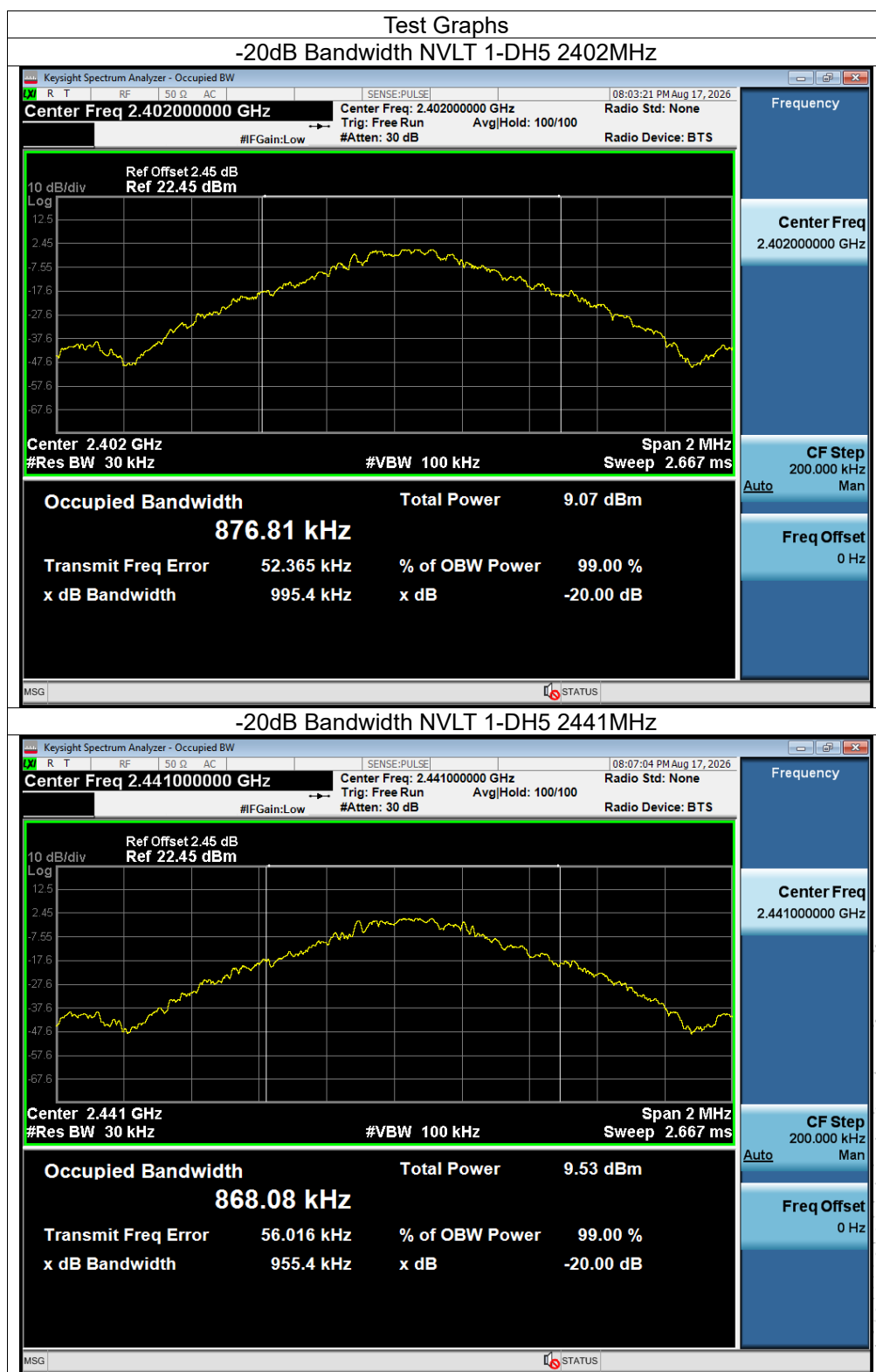
N/A

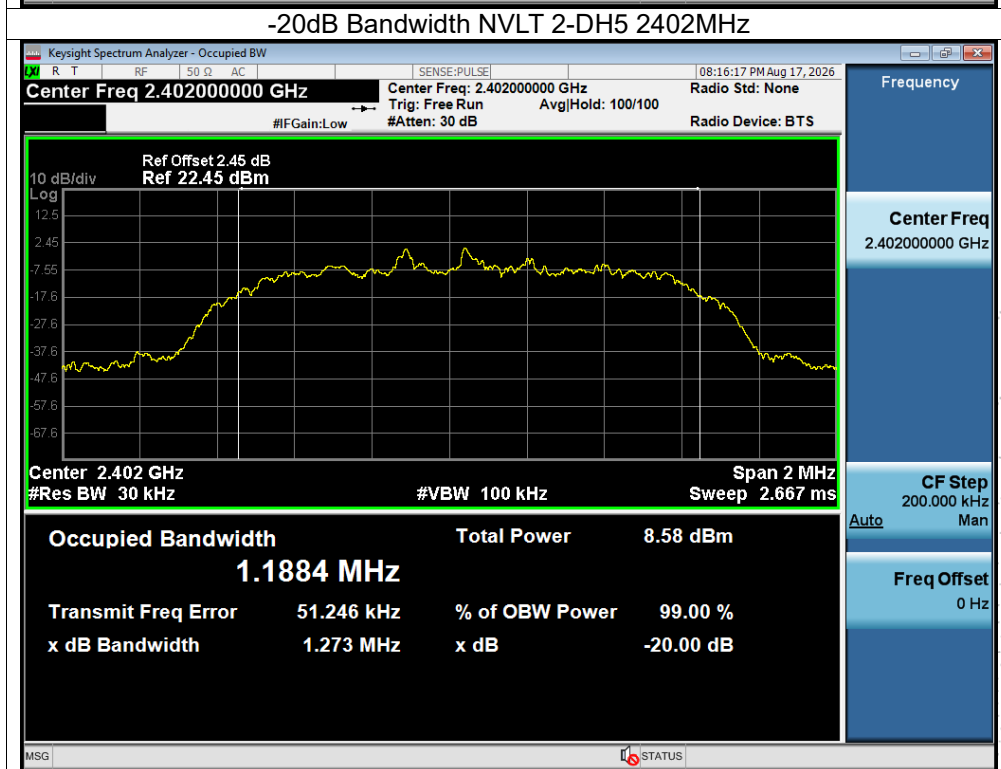
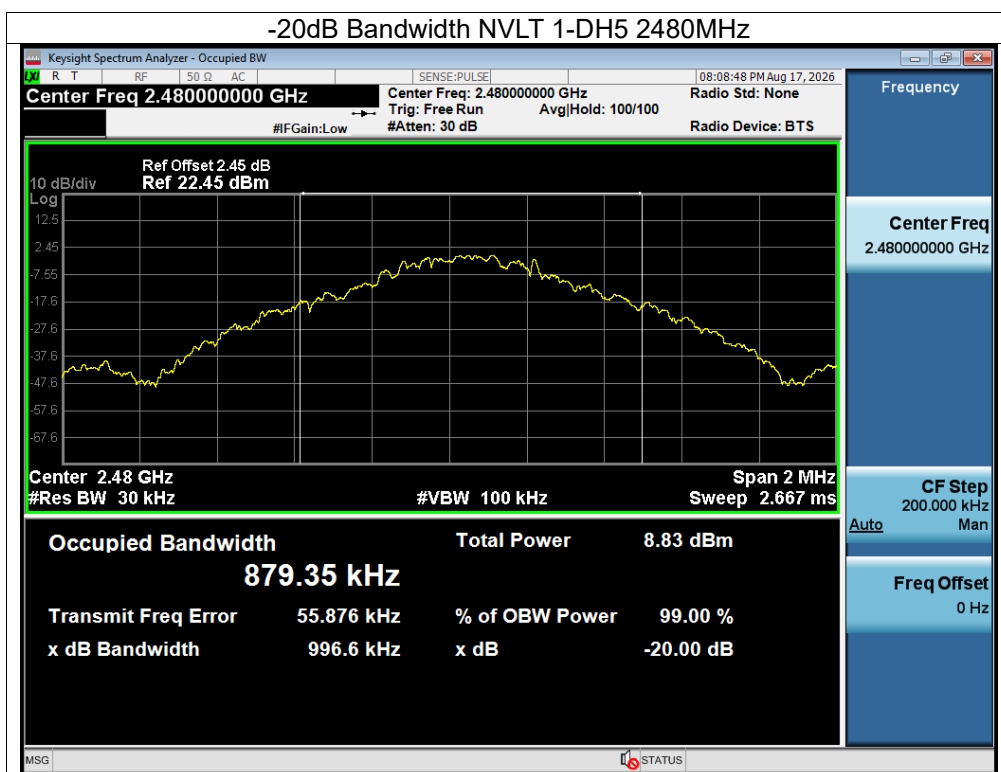
10.3 Test procedure

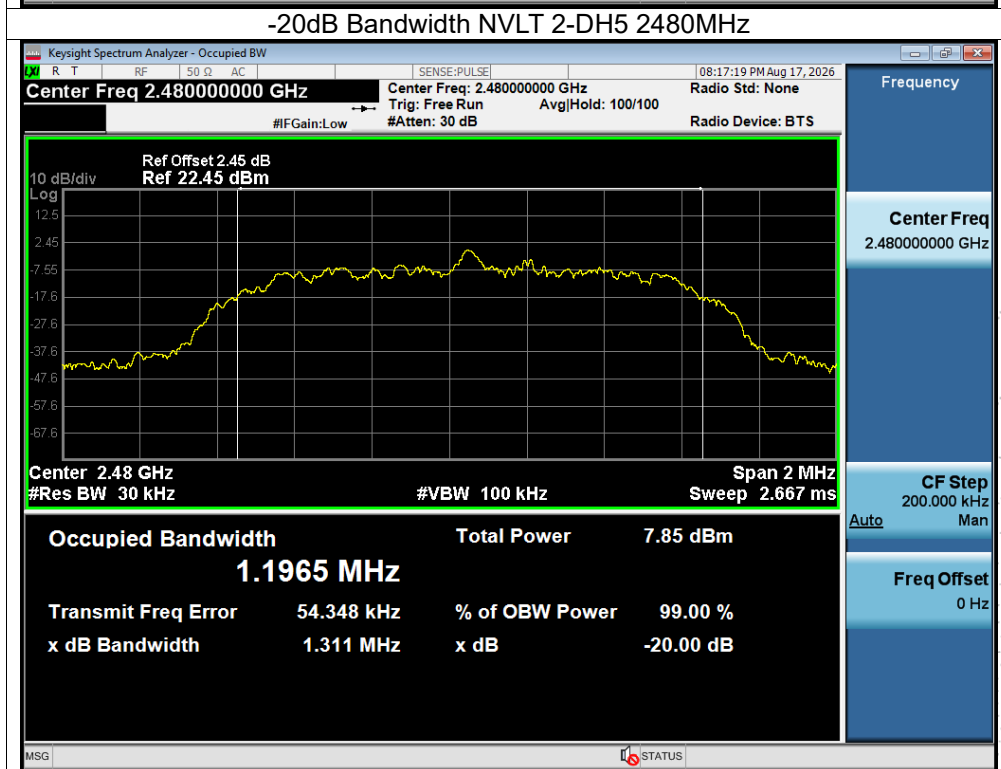
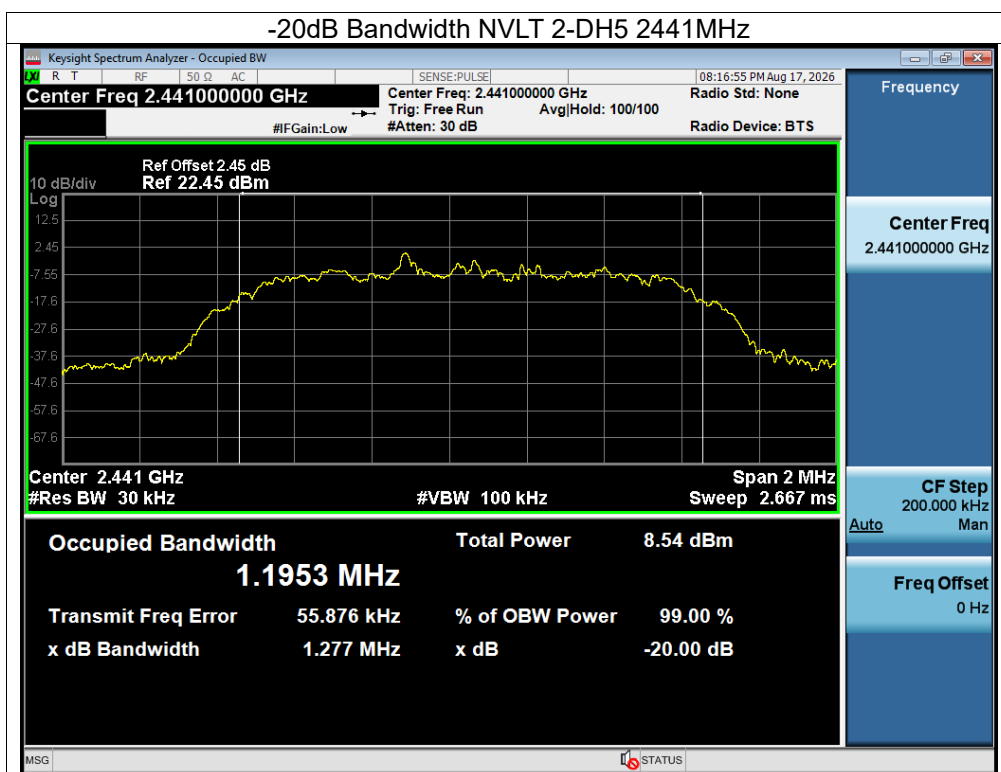
1. Set RBW = 30kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

10.4 Test Result

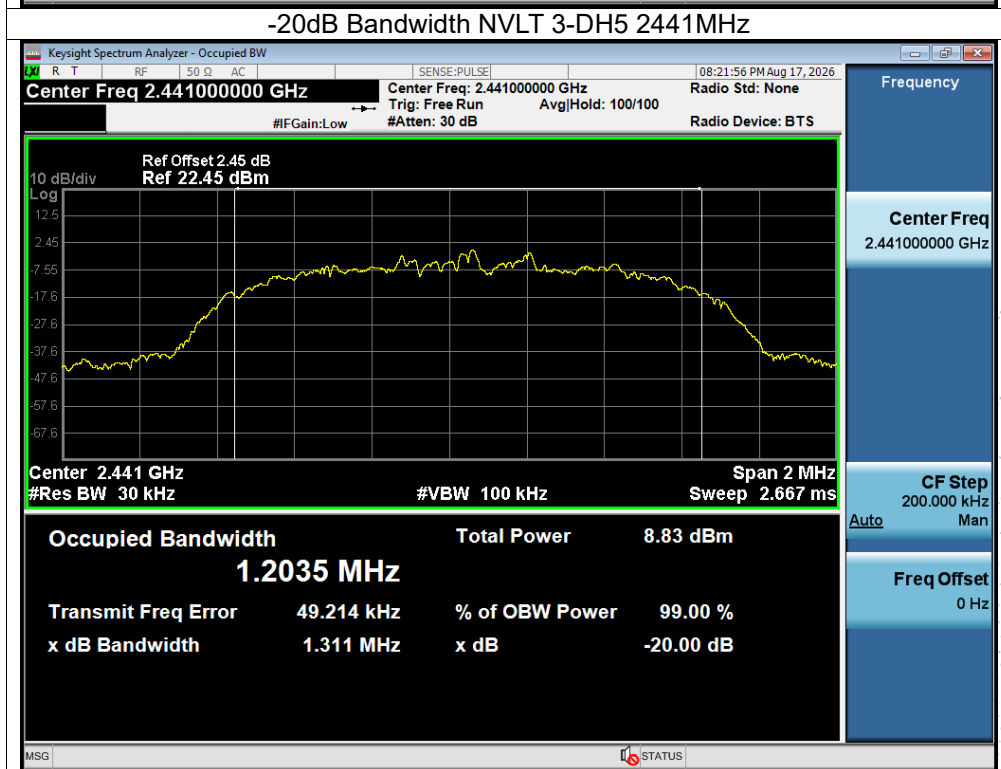
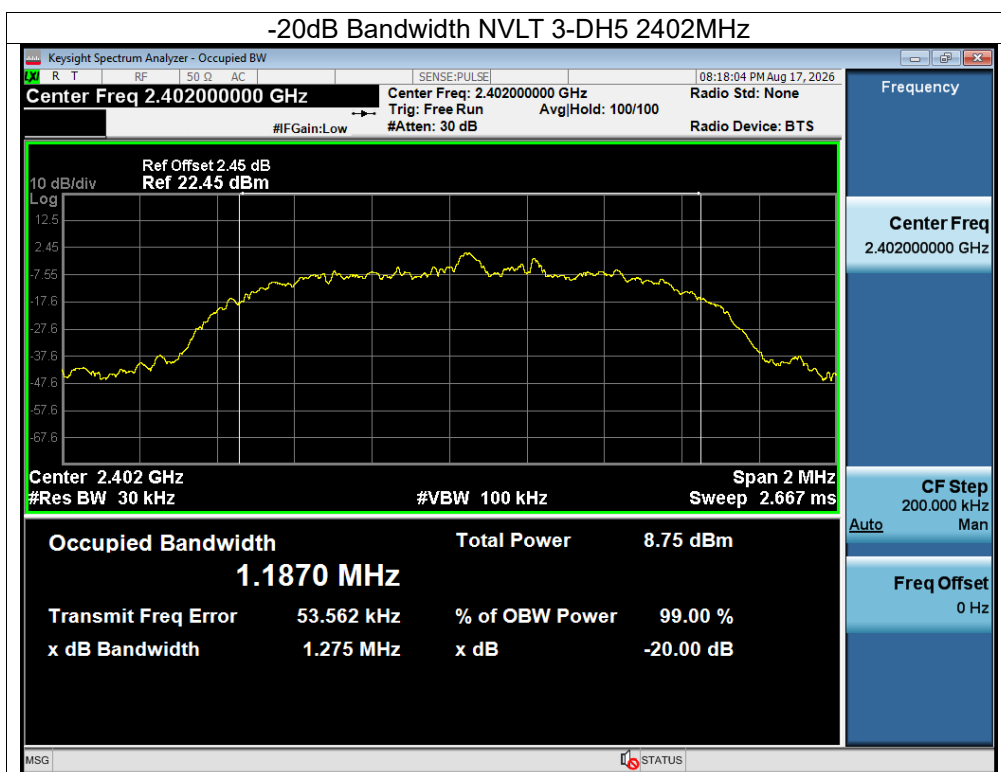
Condition	Mode	Frequency (MHz)	-20 dB Bandwidth (MHz)	Verdict
NVNT	1-DH5	2402	0.995	Pass
NVNT	1-DH5	2441	0.955	Pass
NVNT	1-DH5	2480	0.997	Pass
NVNT	2-DH5	2402	1.273	Pass
NVNT	2-DH5	2441	1.277	Pass
NVNT	2-DH5	2480	1.311	Pass
NVNT	3-DH5	2402	1.275	Pass
NVNT	3-DH5	2441	1.311	Pass
NVNT	3-DH5	2480	1.299	Pass



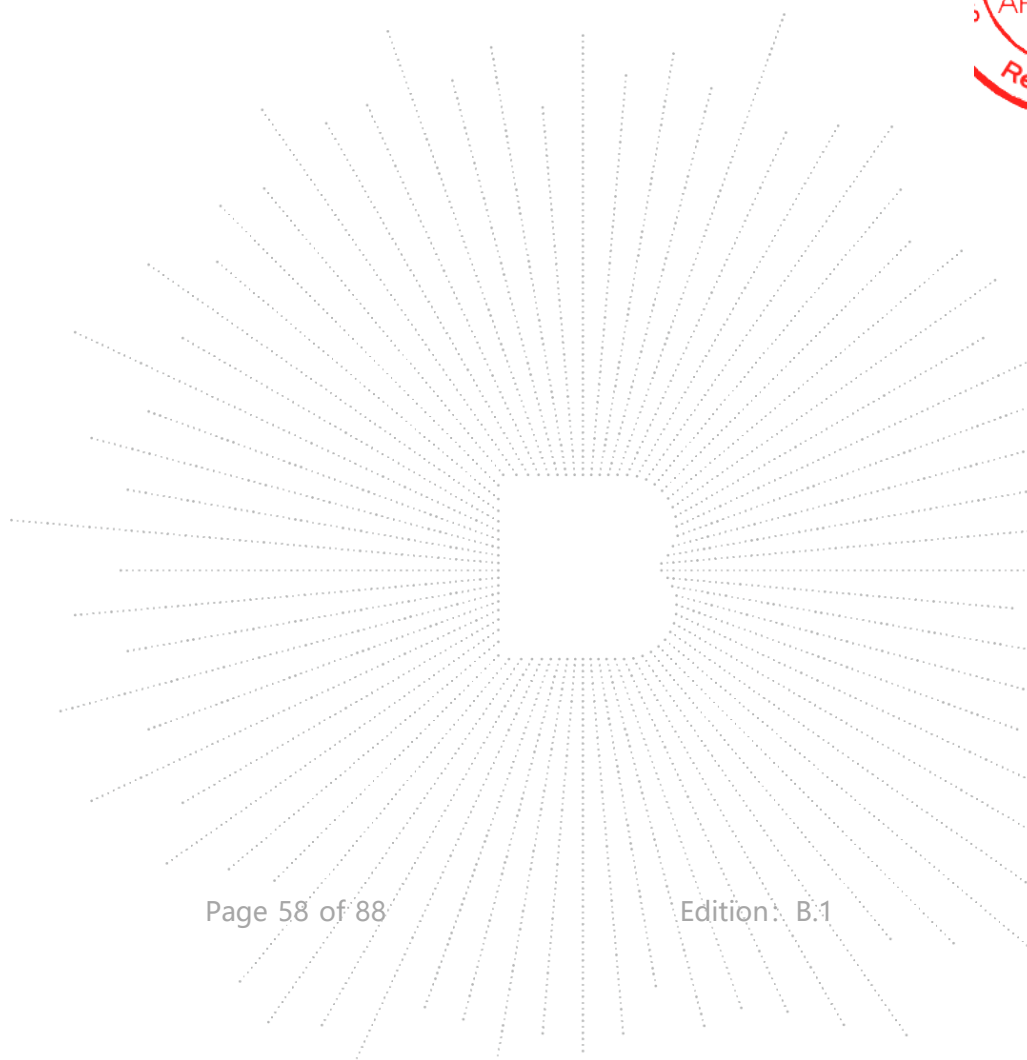
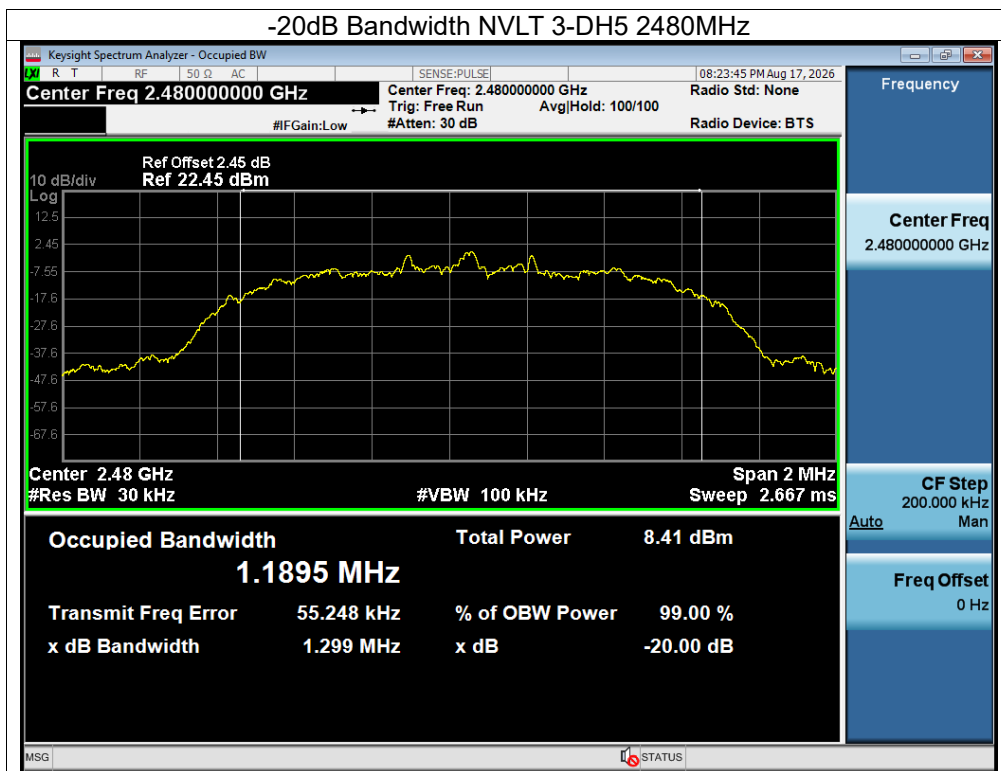




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11. Maximum Peak Output Power

11.1 Block Diagram Of Test Setup



11.2 Limit

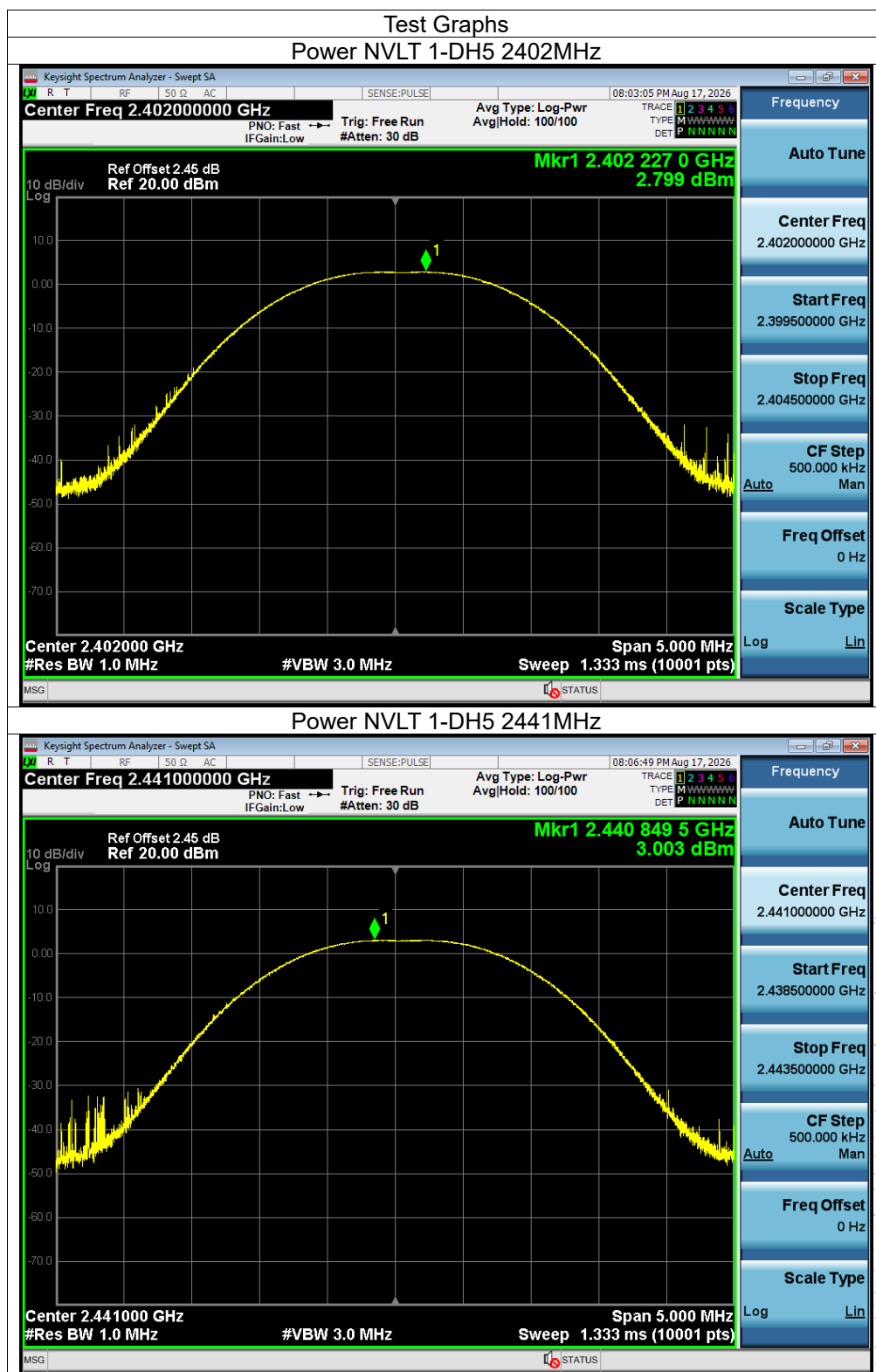
FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 watt or 30dBm (at least 75 nonoverlapping hopping channels)	2400-2483.5	PASS
15.247(b)(1)	Peak Output Power	0.125 watt or 21dBm (all other frequency hopping systems)	2400-2483.5	PASS

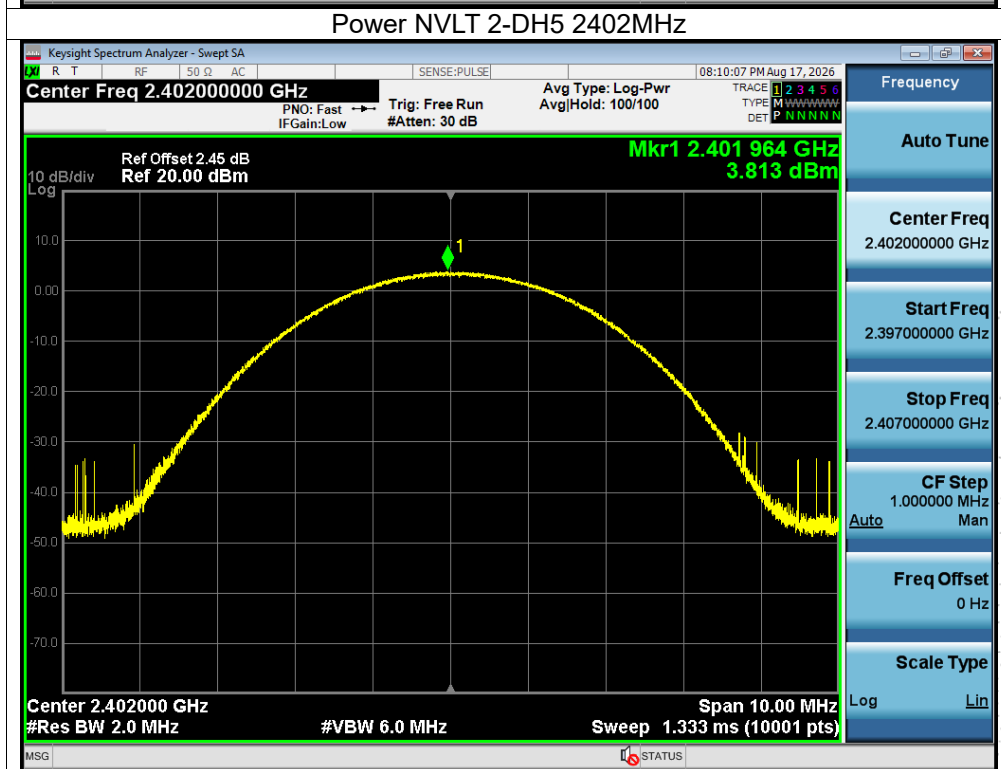
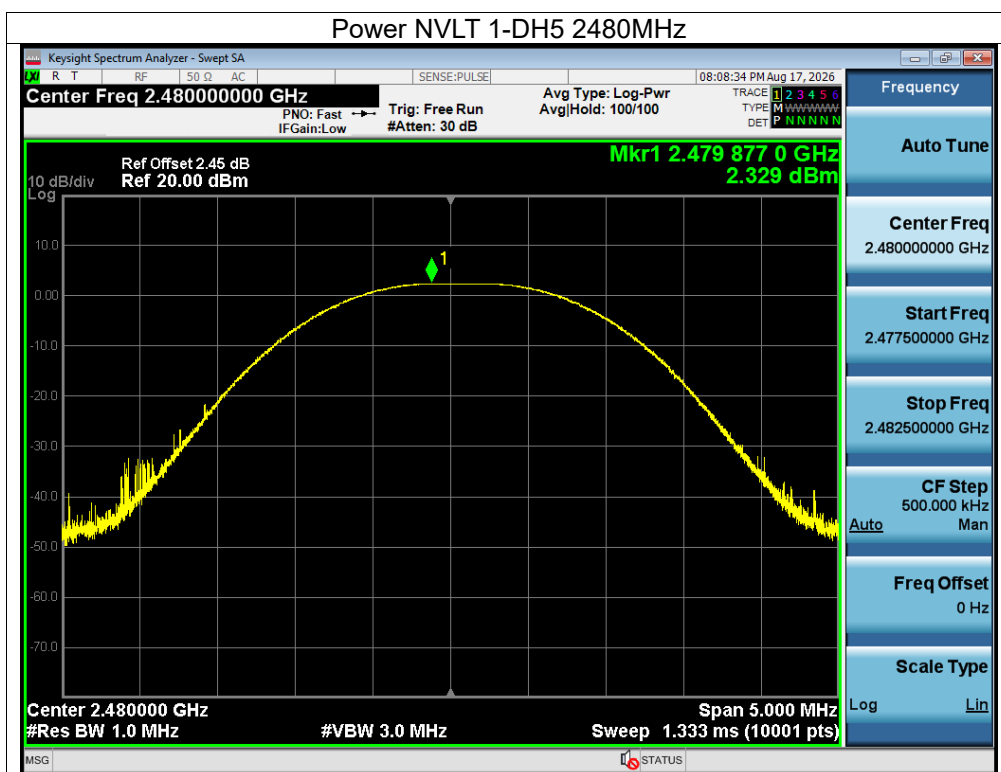
11.3 Test procedure

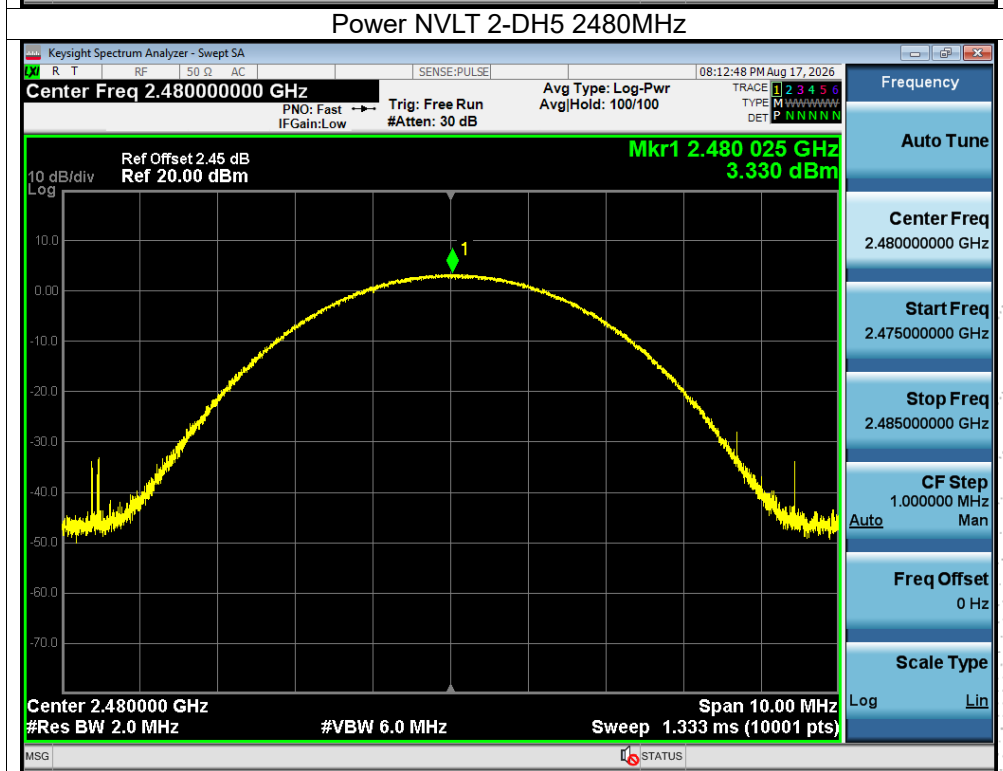
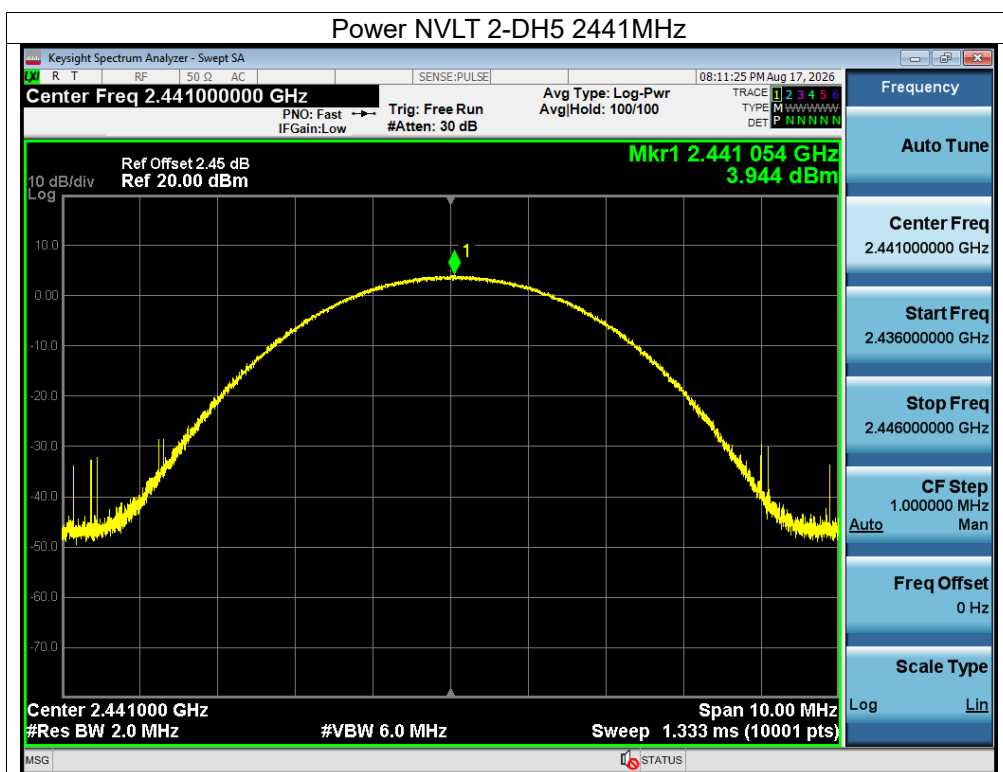
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 2MHz. VBW = 6MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

11.4 Test Result

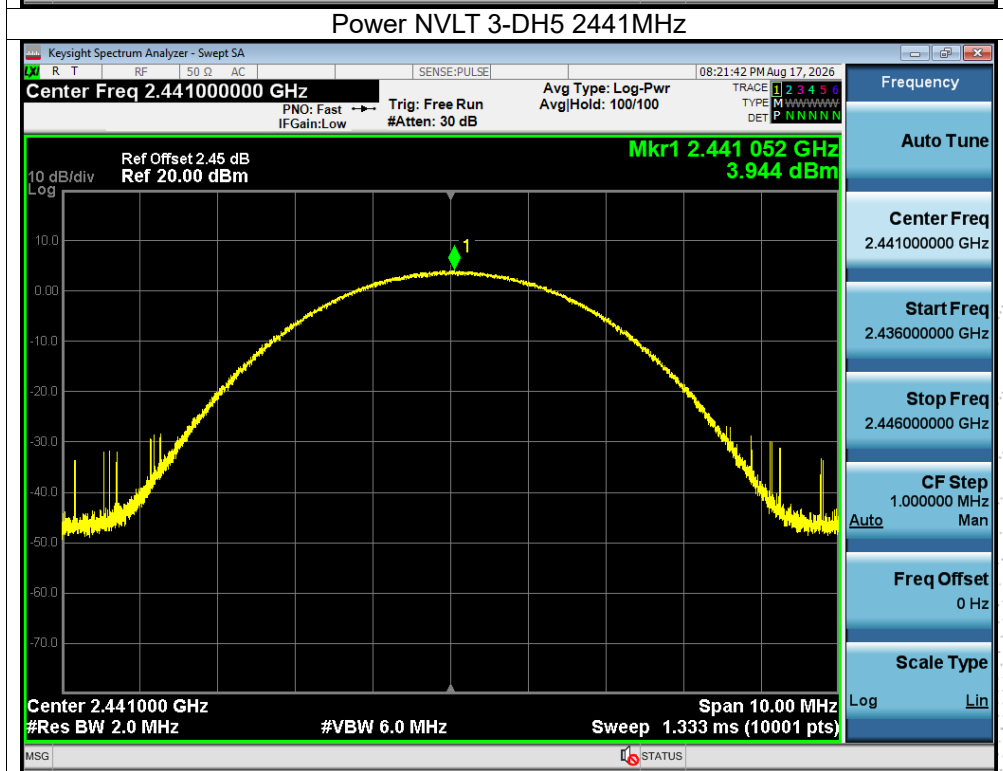
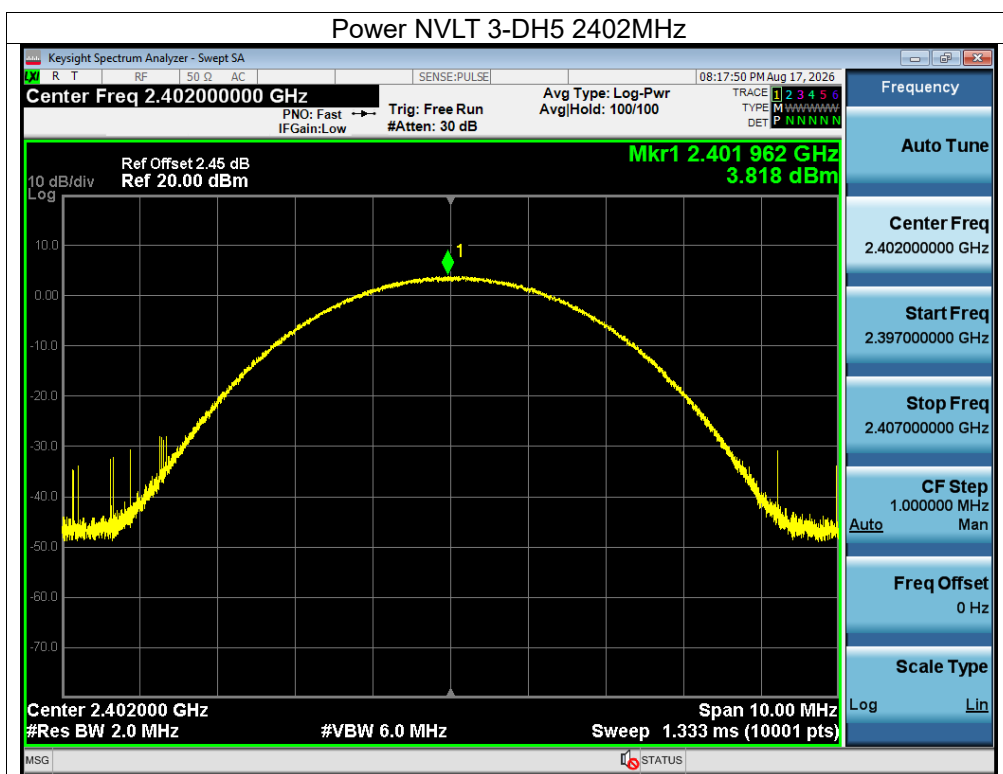
Condition	Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	1-DH5	2402	2.80	30	Pass
NVNT	1-DH5	2441	3.00	30	Pass
NVNT	1-DH5	2480	2.33	30	Pass
NVNT	2-DH5	2402	3.81	21	Pass
NVNT	2-DH5	2441	3.94	21	Pass
NVNT	2-DH5	2480	3.33	21	Pass
NVNT	3-DH5	2402	3.82	21	Pass
NVNT	3-DH5	2441	3.94	21	Pass
NVNT	3-DH5	2480	3.32	21	Pass



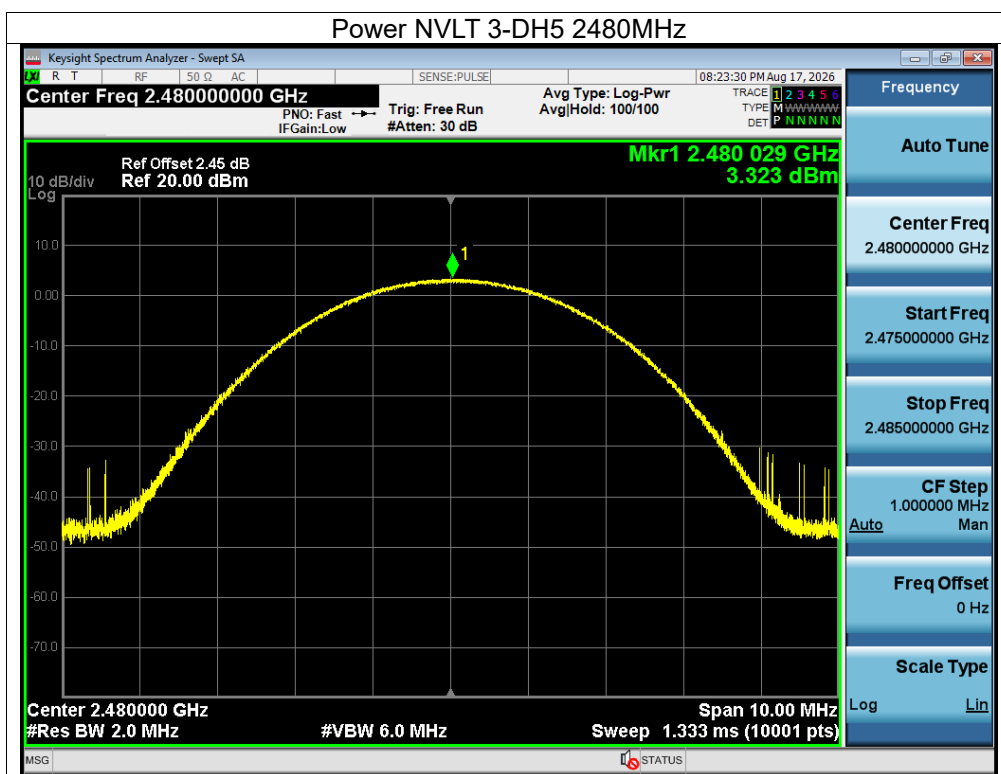




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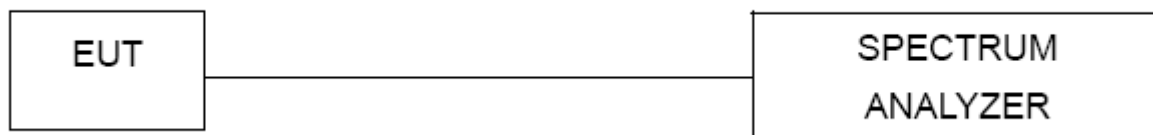


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12. Hopping Channel Separation

12.1 Block Diagram Of Test Setup



12.2 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125W.

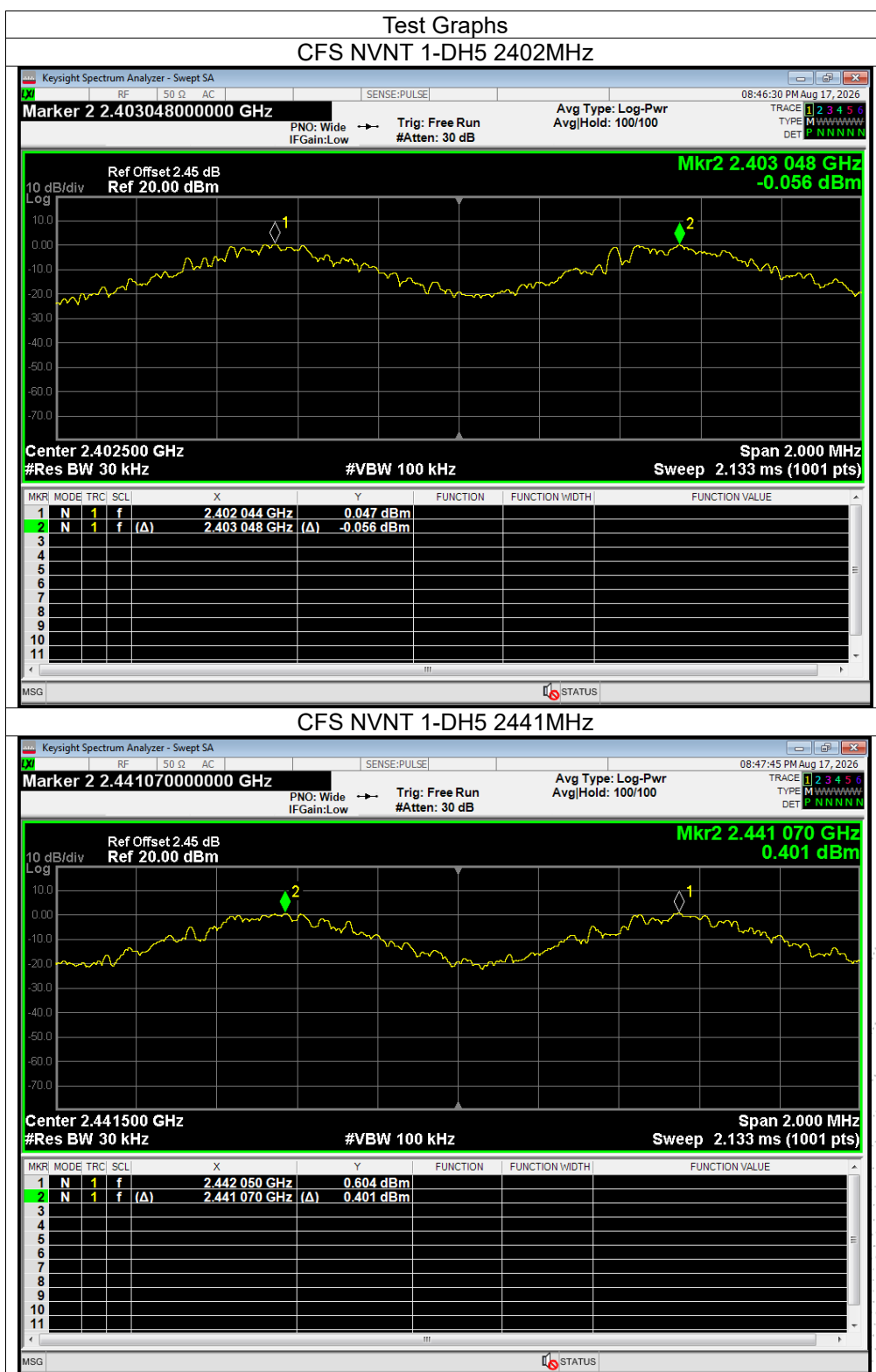
12.3 Test procedure

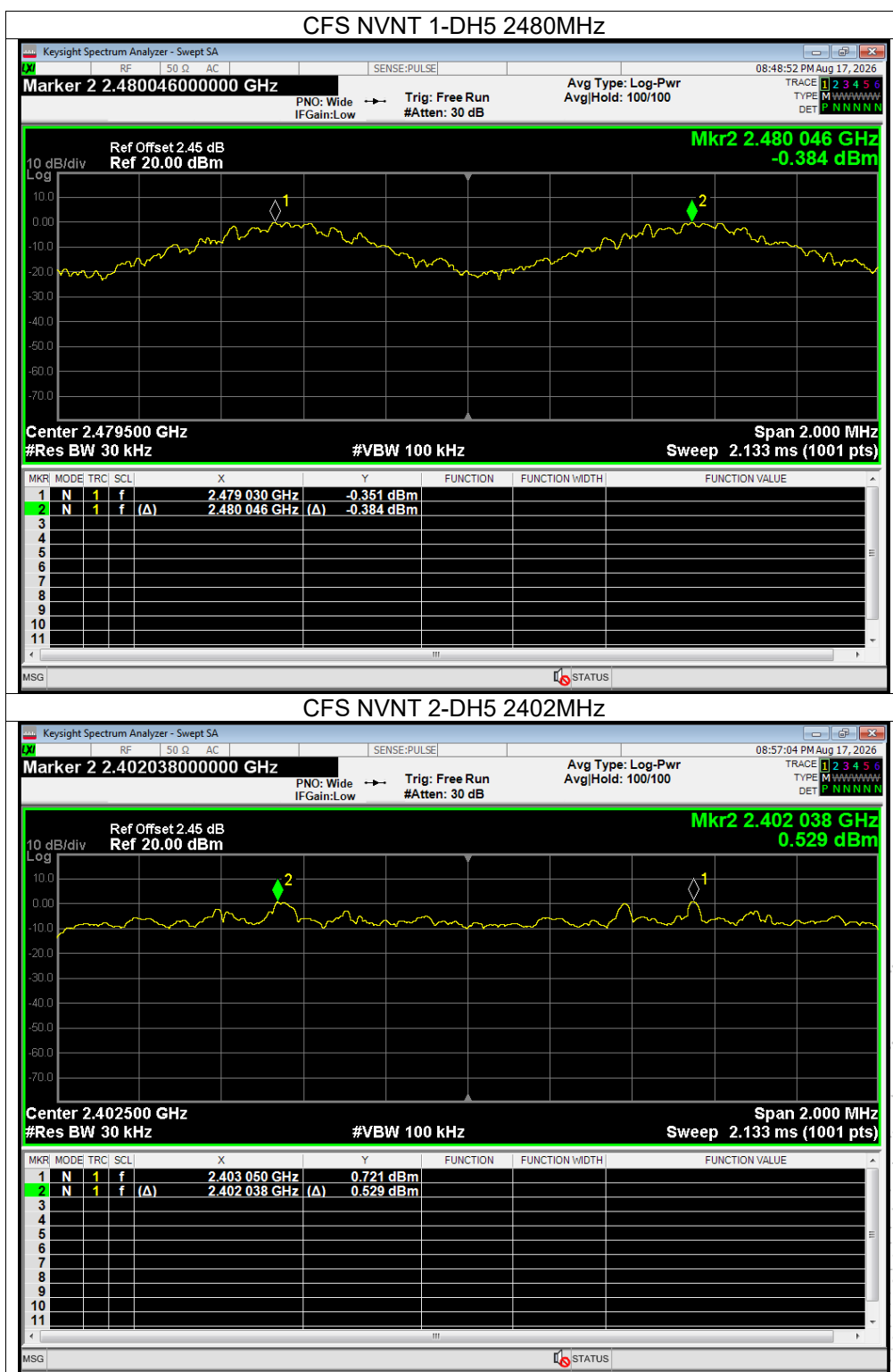
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz , Span = 2.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

12.4 Test Result

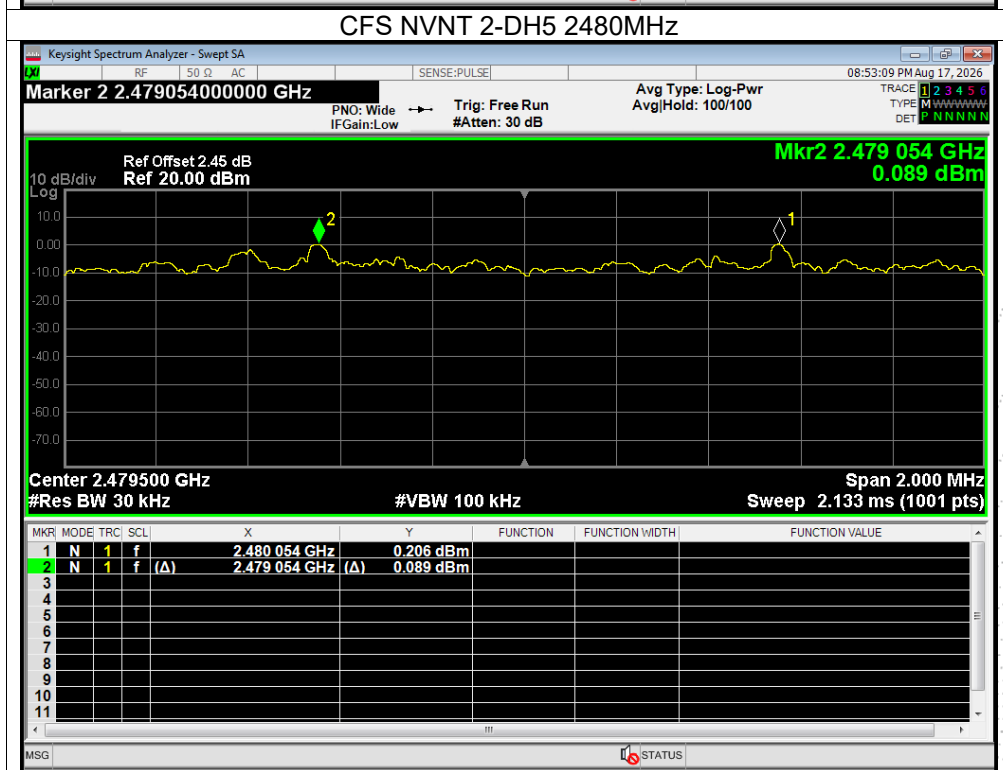
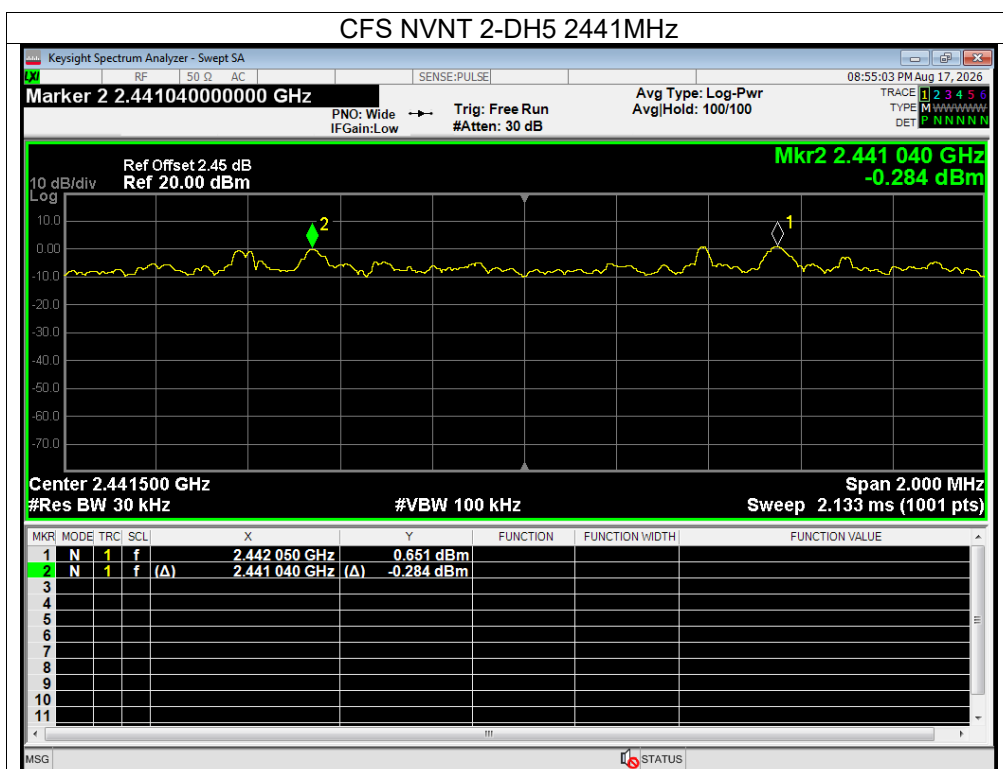
Condition	Mode	Hopping Freq1 (MHz)	Hopping Freq2 (MHz)	HFS (MHz)	Limit (MHz)	Verdict
NVNT	1-DH5	2402.044	2403.048	1.004	0.663	Pass
NVNT	1-DH5	2442.050	2441.070	0.980	0.637	Pass
NVNT	1-DH5	2479.030	2480.046	1.016	0.665	Pass
NVNT	2-DH5	2403.050	2402.038	1.012	0.849	Pass
NVNT	2-DH5	2442.050	2441.040	1.010	0.851	Pass
NVNT	2-DH5	2480.054	2479.054	1.000	0.874	Pass
NVNT	3-DH5	2403.186	2402.186	1.000	0.850	Pass
NVNT	3-DH5	2442.046	2441.050	0.996	0.874	Pass
NVNT	3-DH5	2480.054	2479.050	1.004	0.866	Pass

Note: For conducted power less than 0.125 W(21 dBm), the limit can be set using hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

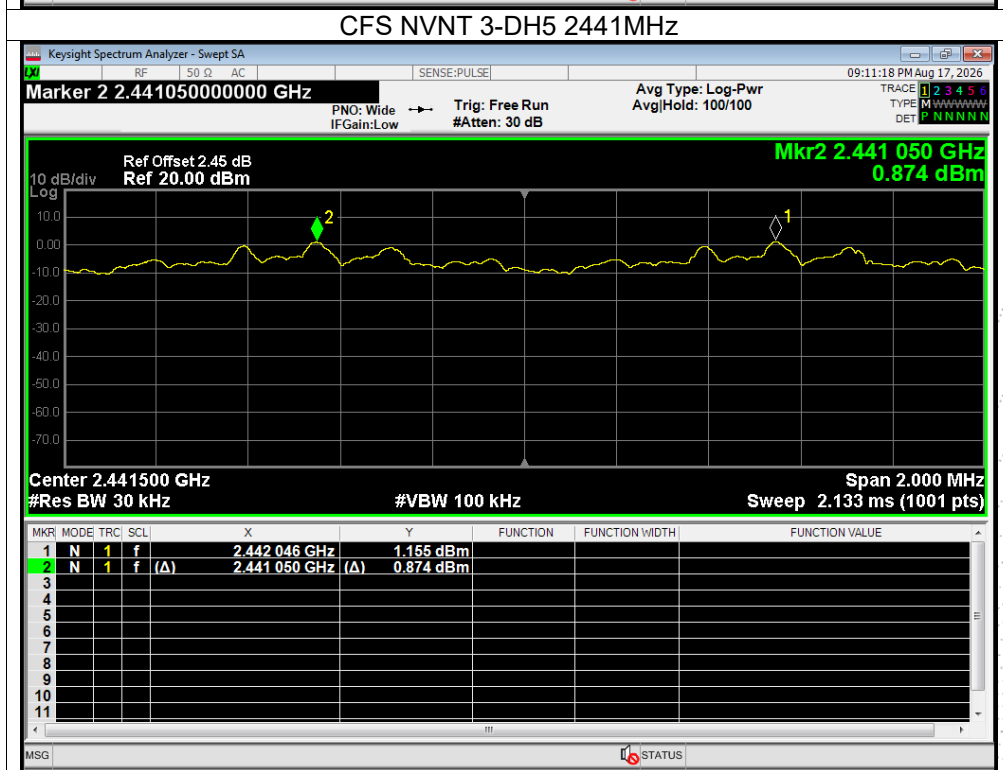
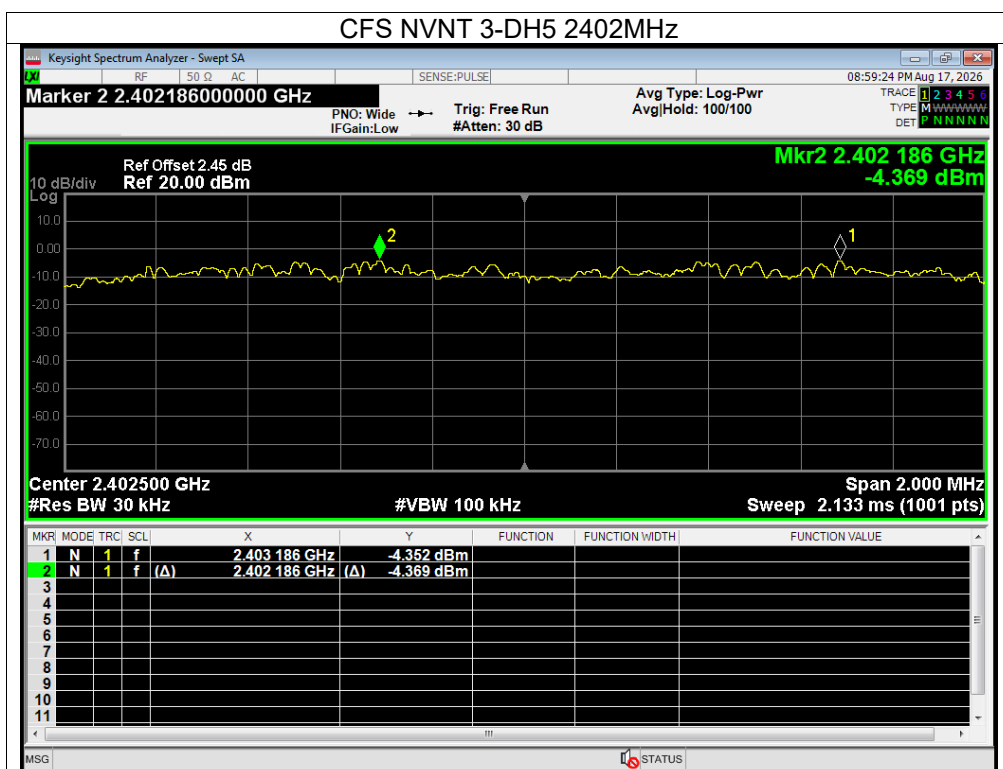


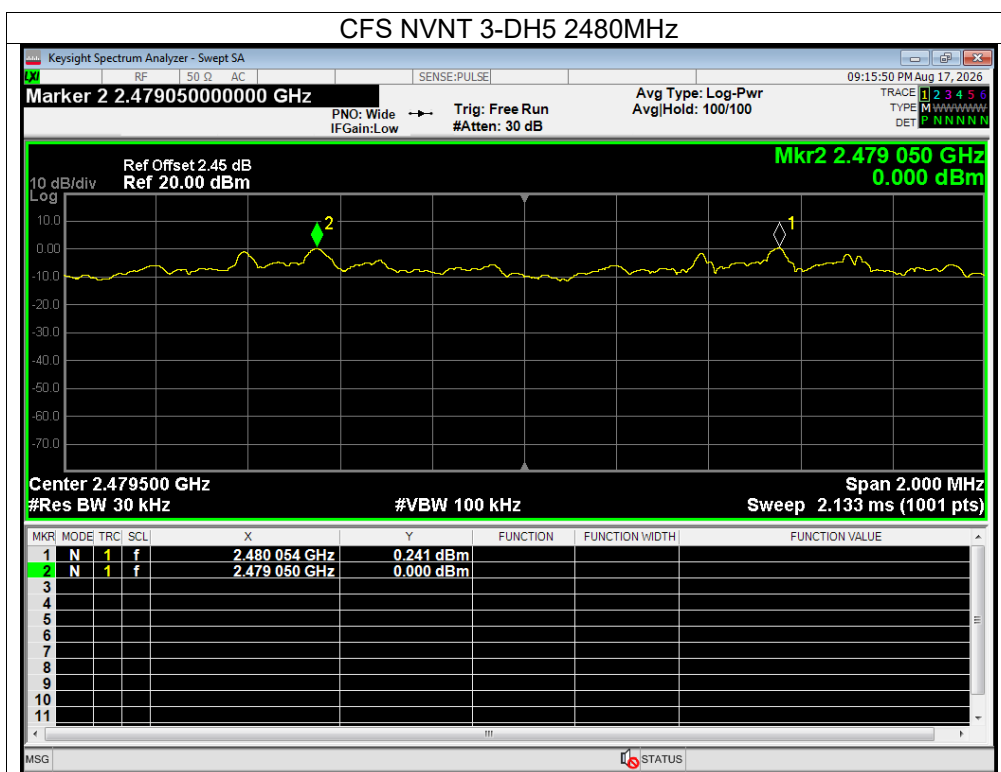


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13. Number of Hopping Frequency

13.1 Block Diagram Of Test Setup



13.2 Limit

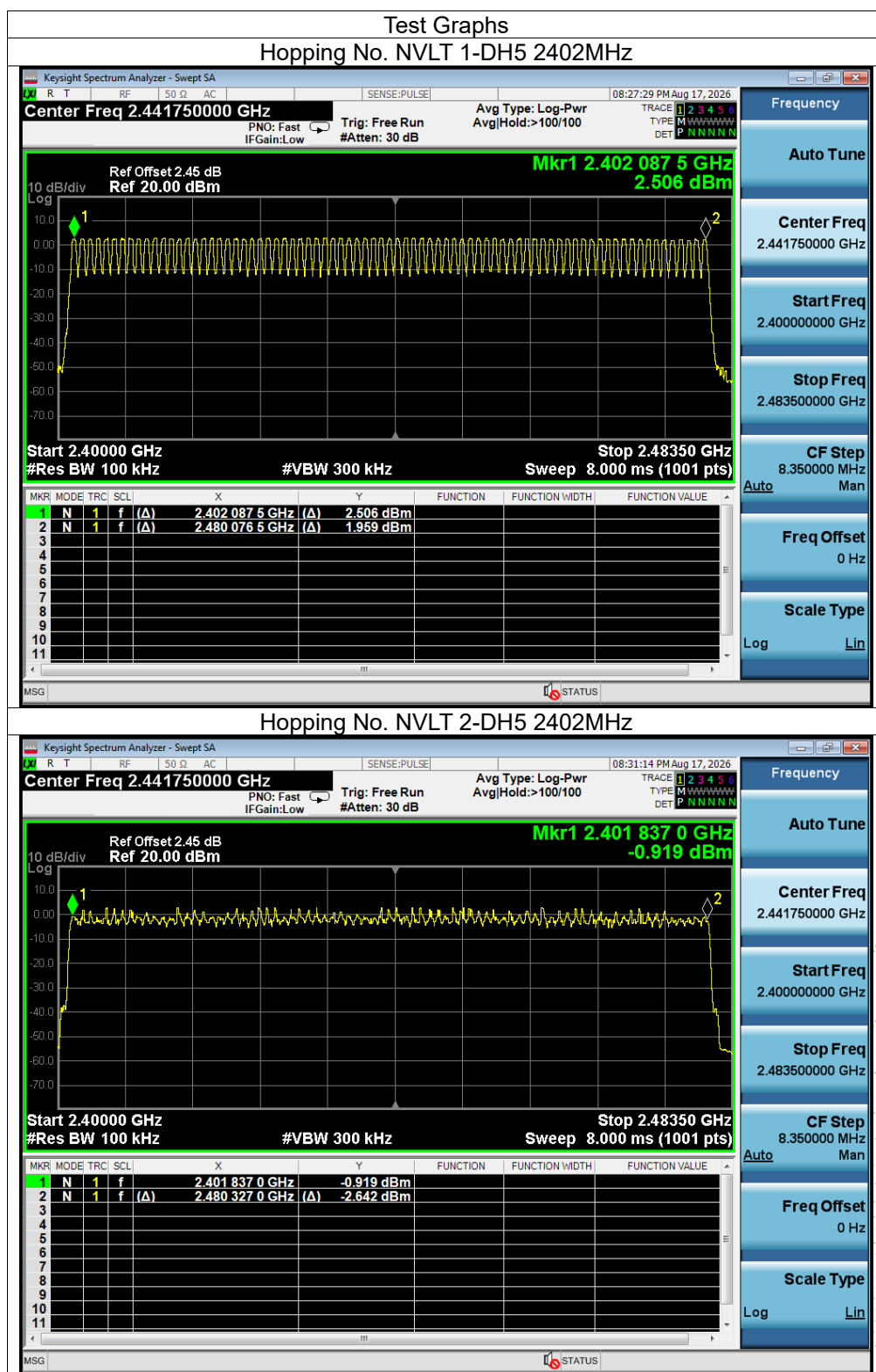
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

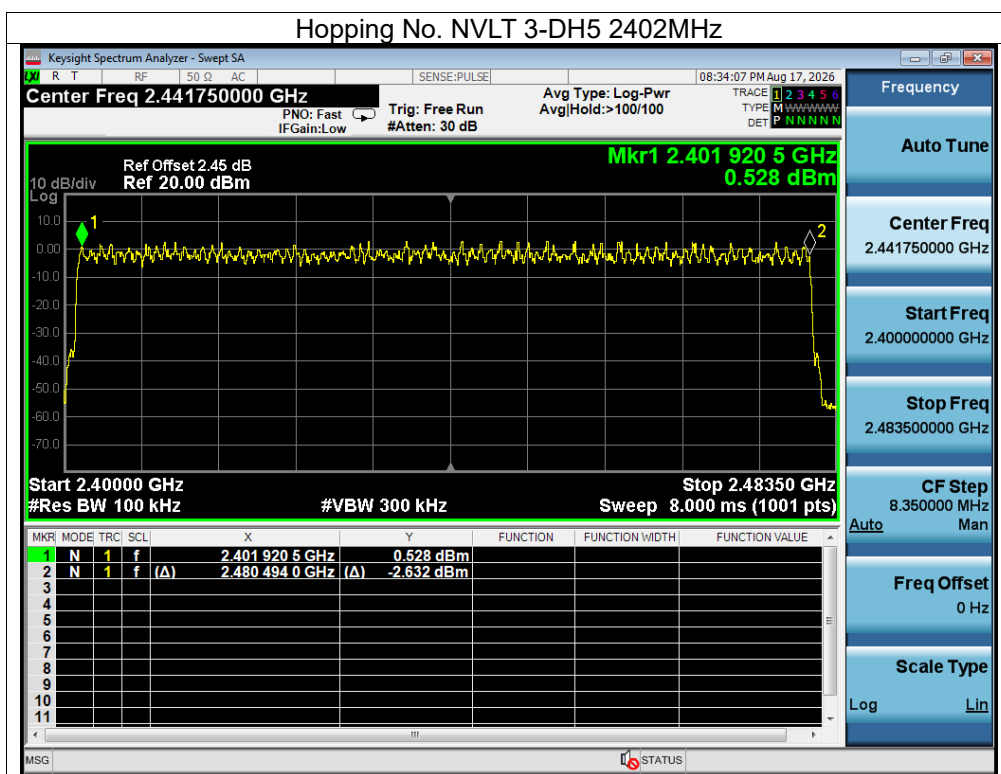
13.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

13.4 Test Result

Condition	Mode	Hopping Number	Limit	Verdict
NVNT	1-DH5	79	15	Pass
NVNT	2-DH5	79	15	Pass
NVNT	3-DH5	79	15	Pass

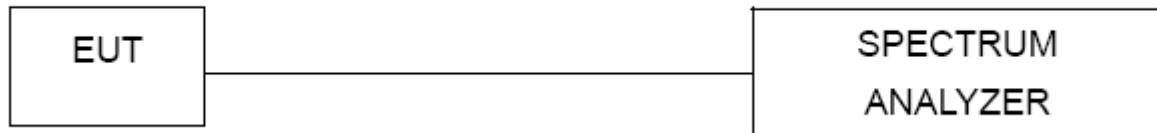




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14. Dwell Time

14.1 Block Diagram Of Test Setup



14.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

14.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set spectrum analyzer span = 0. Centred on a hopping channel;
3. Set RBW = 1MHz and VBW = 3MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

14.4 Test Result

DH5 Packet permit maximum 1600 / 79 / 6 hops per second in each channel
(5 time slots RX, 1 time slot TX).

DH3 Packet permit maximum 1600 / 79 / 4 hops per second in each channel
(3 time slots RX, 1 time slot TX).

DH1 Packet permit maximum 1600 / 79 / 2 hops per second in each channel
(1 time slot RX, 1 time slot TX). So, the Dwell Time can be calculated as follows:

DH5: $1600/79/6 \times 0.4 \times 79 \times (\text{MkrDelta})/1000$

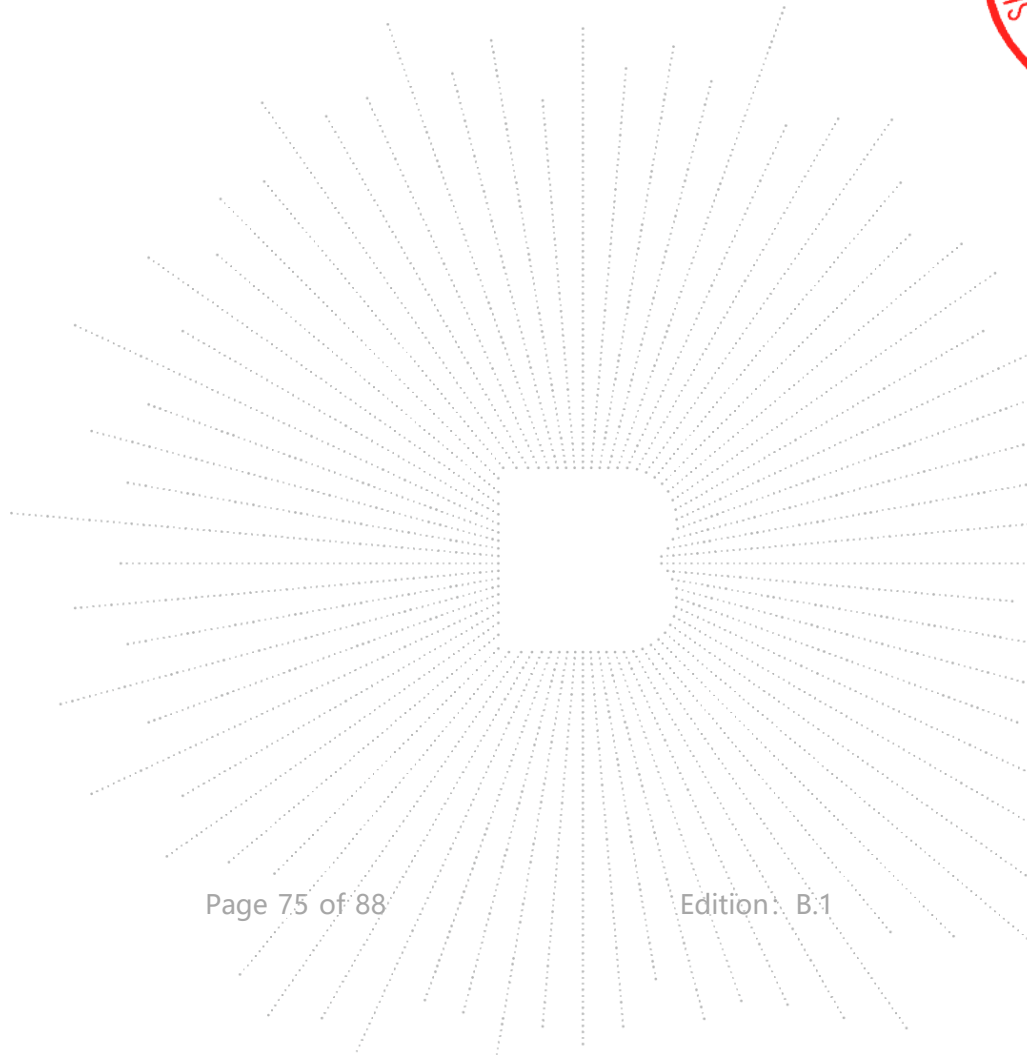
DH3: $1600/79/4 \times 0.4 \times 79 \times (\text{MkrDelta})/1000$

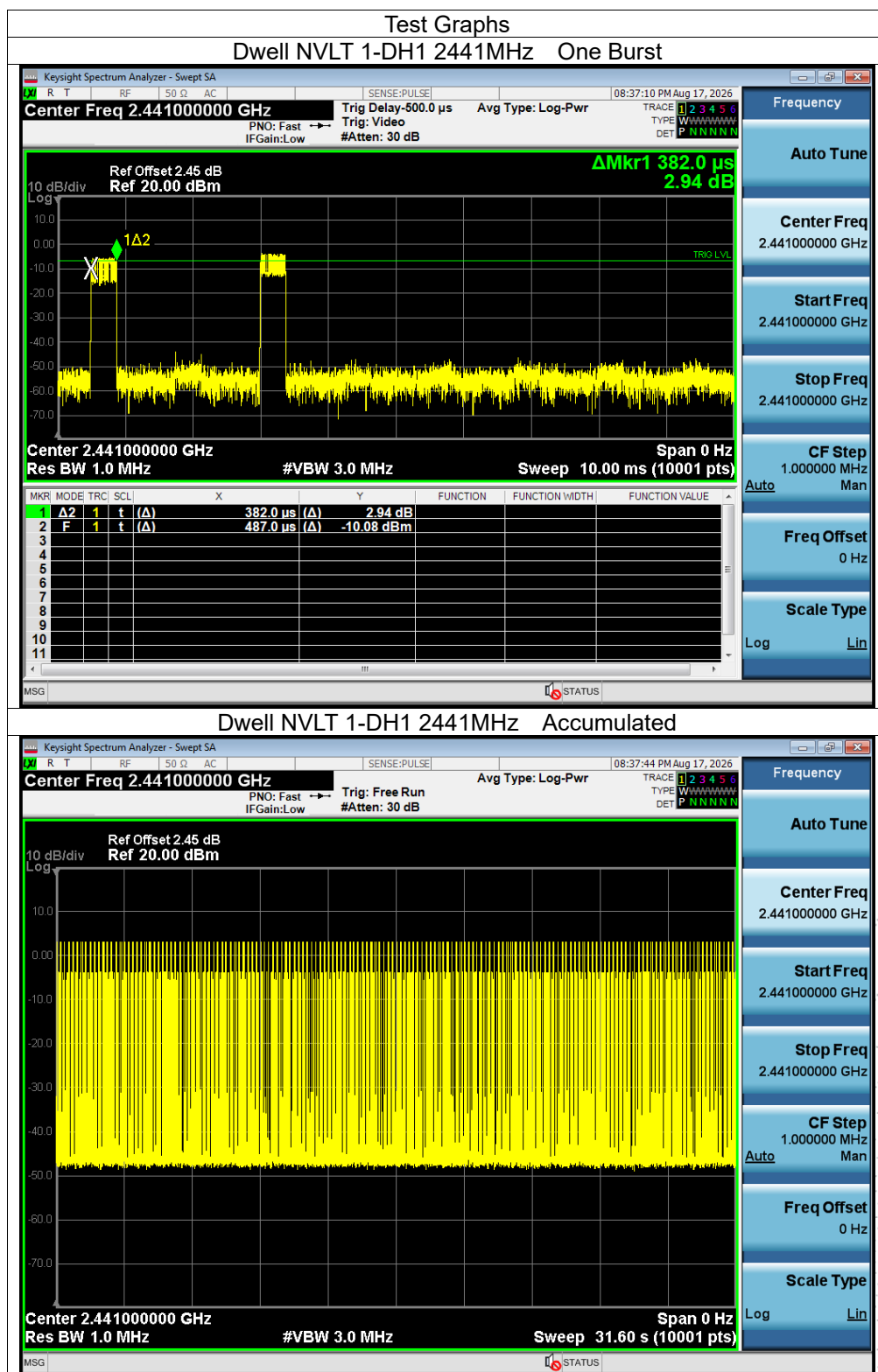
DH1: $1600/79/2 \times 0.4 \times 79 \times (\text{MkrDelta})/1000$

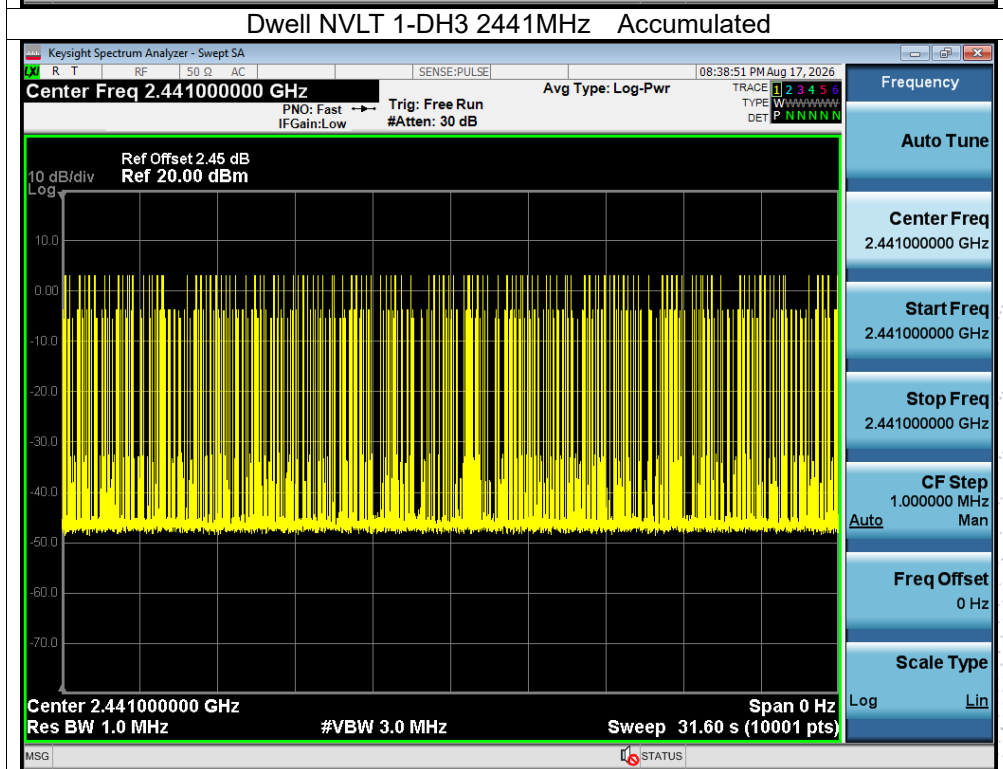
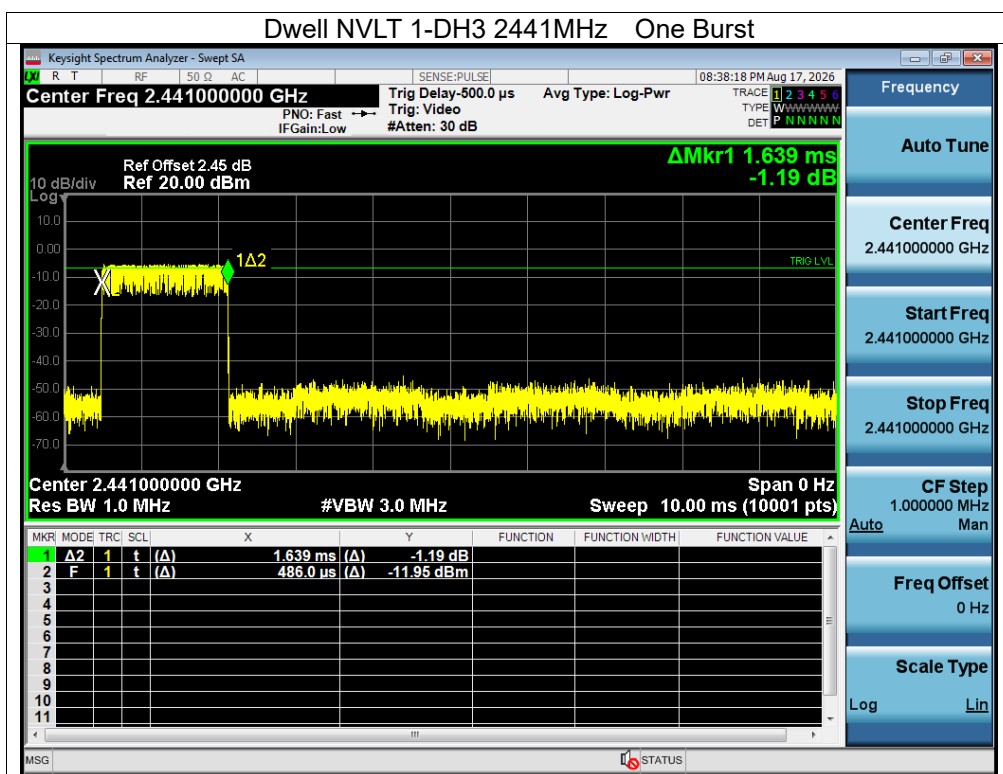
Remark: Mkr Delta is once pulse time.

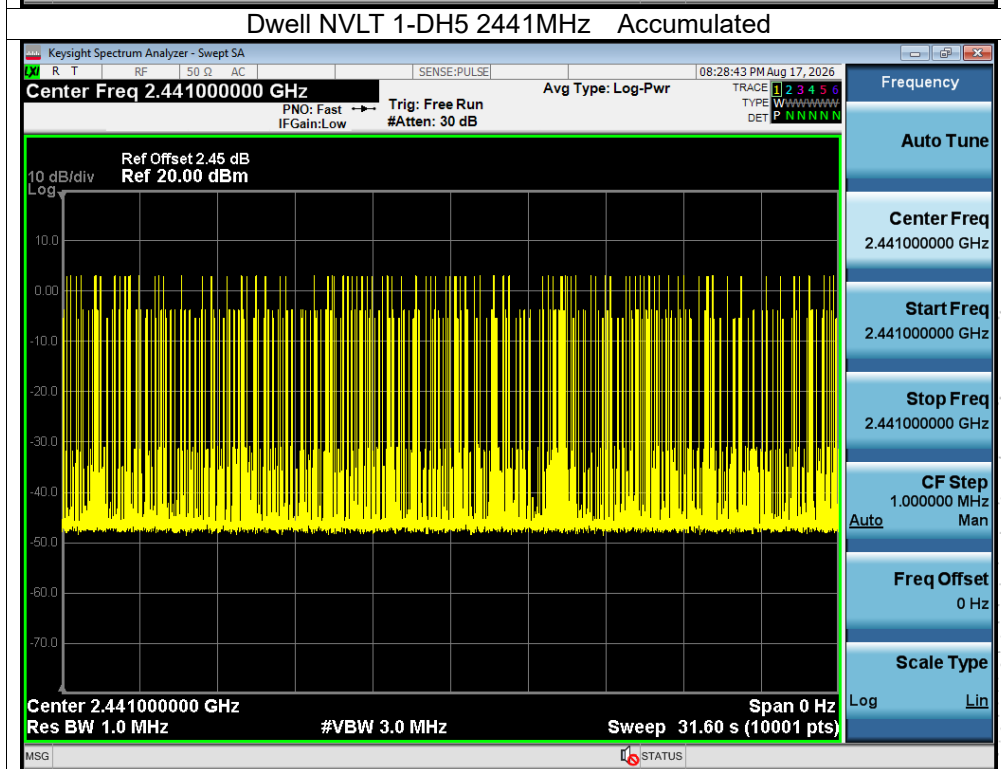
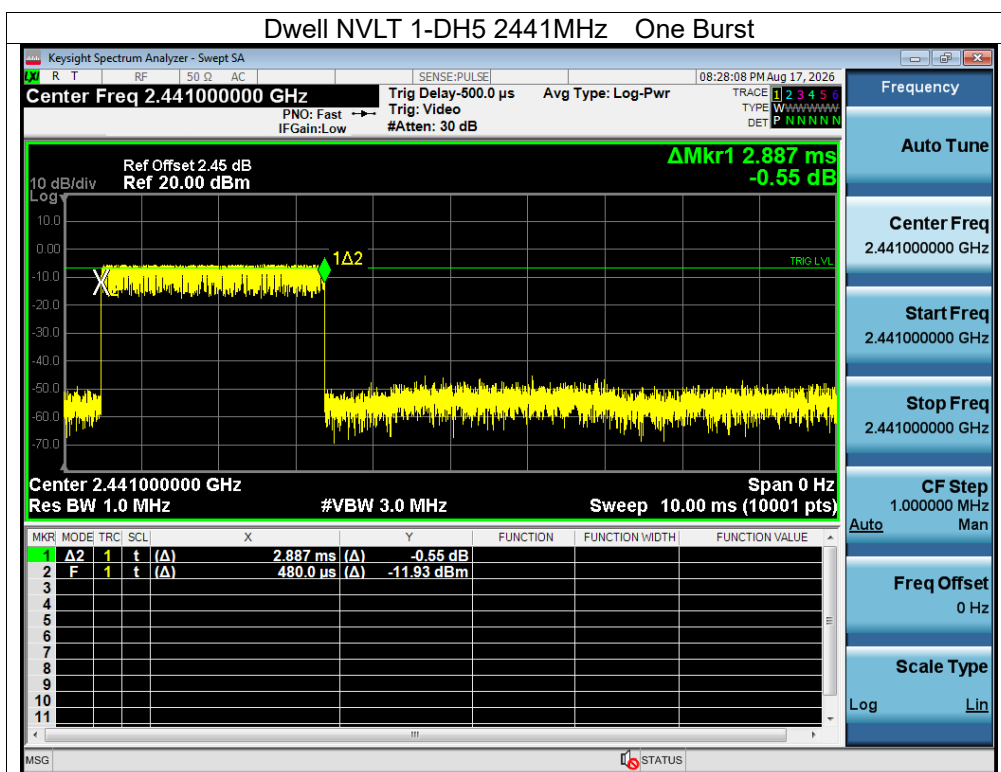
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.382	120.330	400	Pass
NVNT	1-DH3	2441	1.639	262.240	400	Pass
NVNT	1-DH5	2441	2.887	326.231	400	Pass
NVNT	2-DH1	2441	0.392	124.264	400	Pass
NVNT	2-DH3	2441	1.636	255.216	400	Pass
NVNT	2-DH5	2441	2.892	309.444	400	Pass
NVNT	3-DH1	2441	0.392	123.872	400	Pass
NVNT	3-DH3	2441	1.641	267.483	400	Pass
NVNT	3-DH5	2441	2.894	332.810	400	Pass

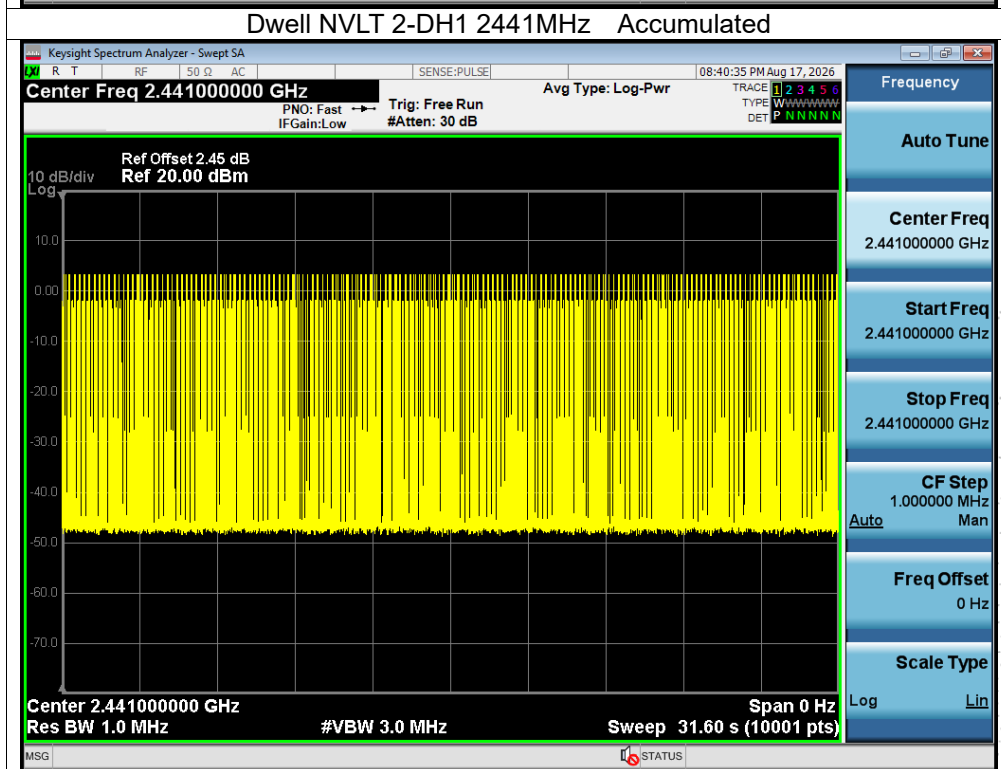
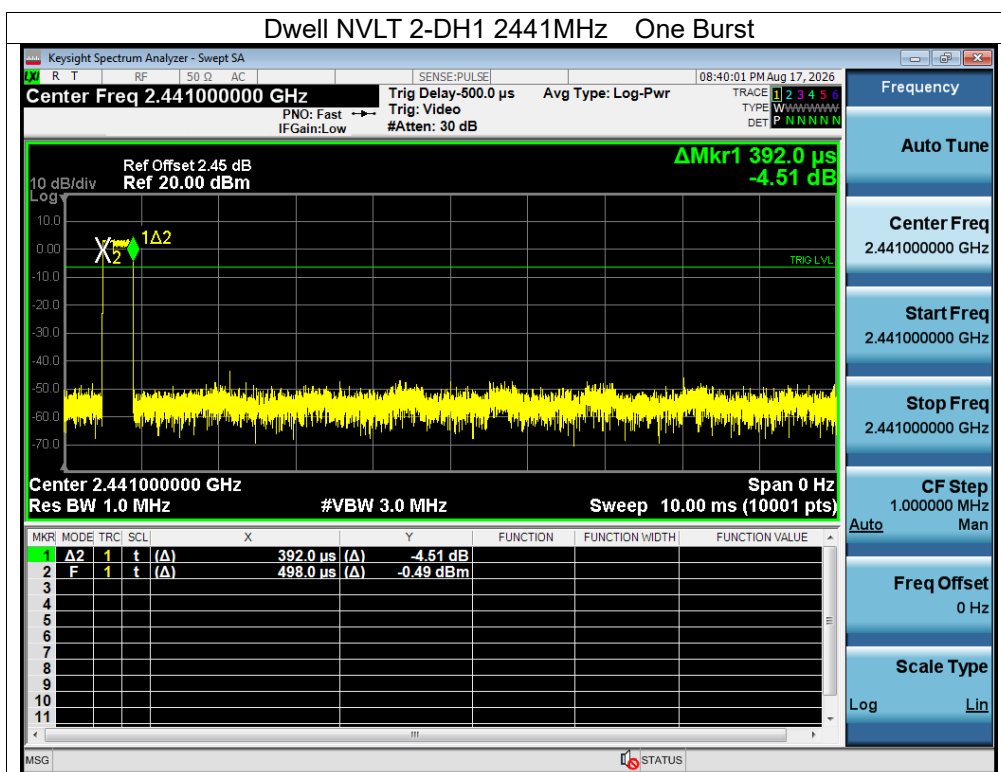
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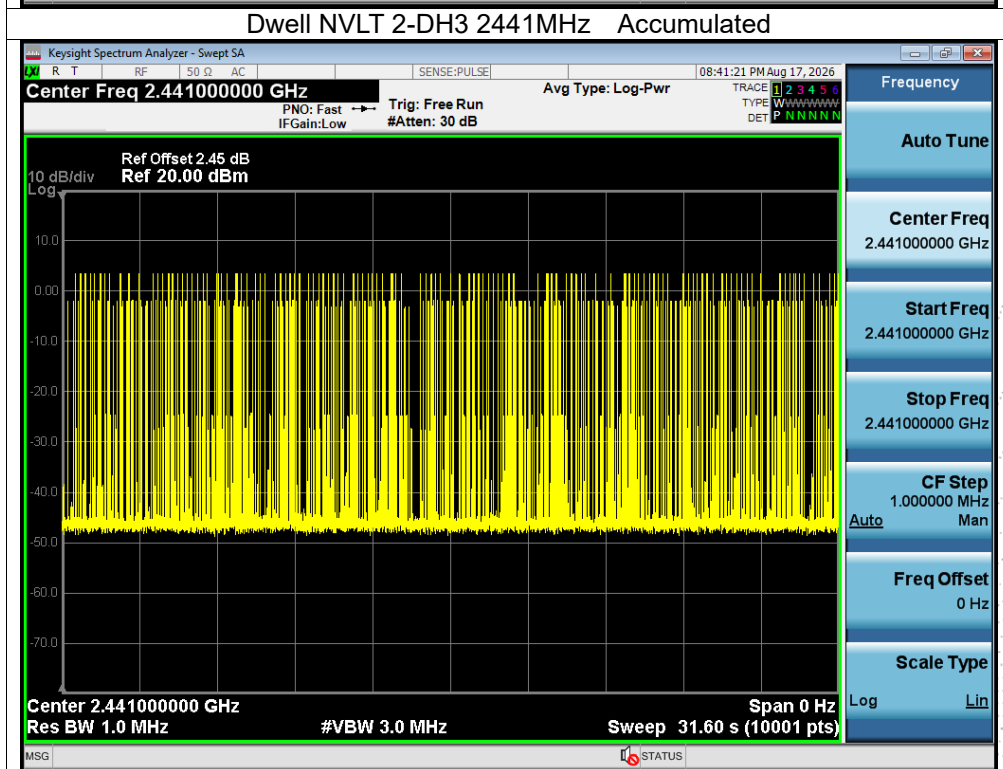
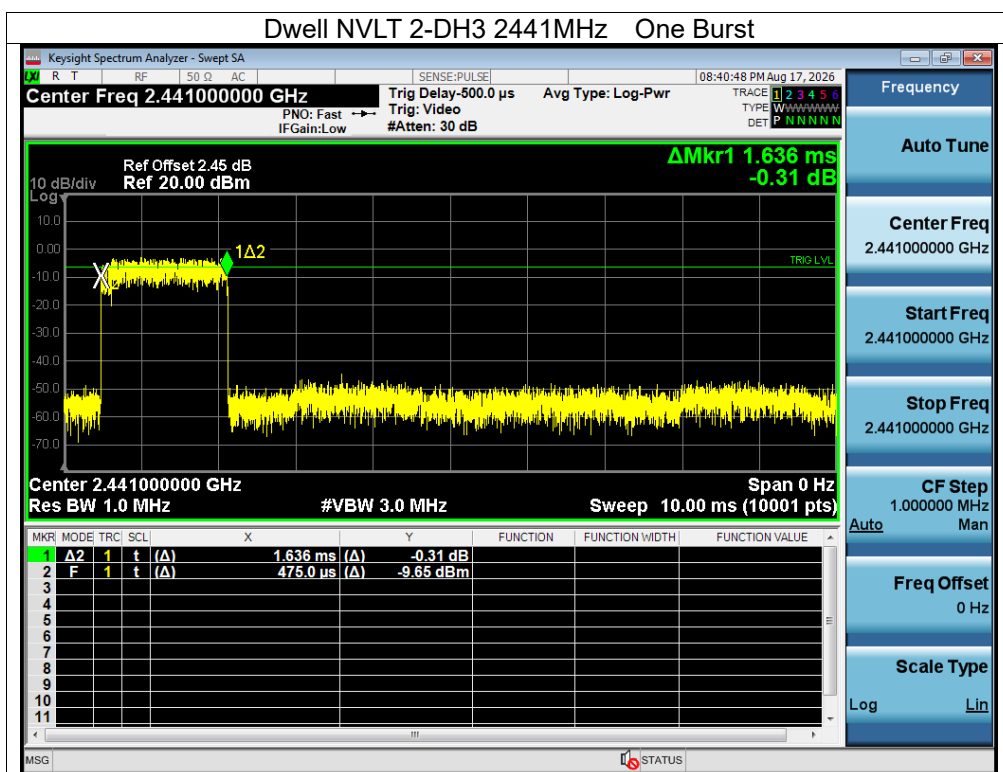




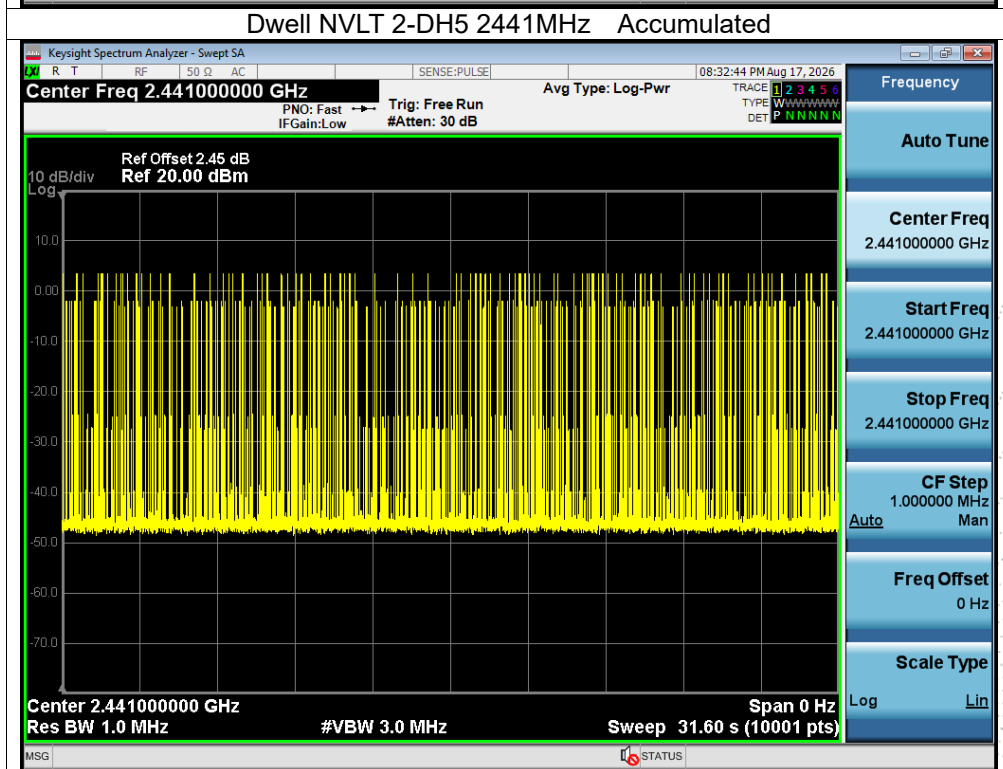
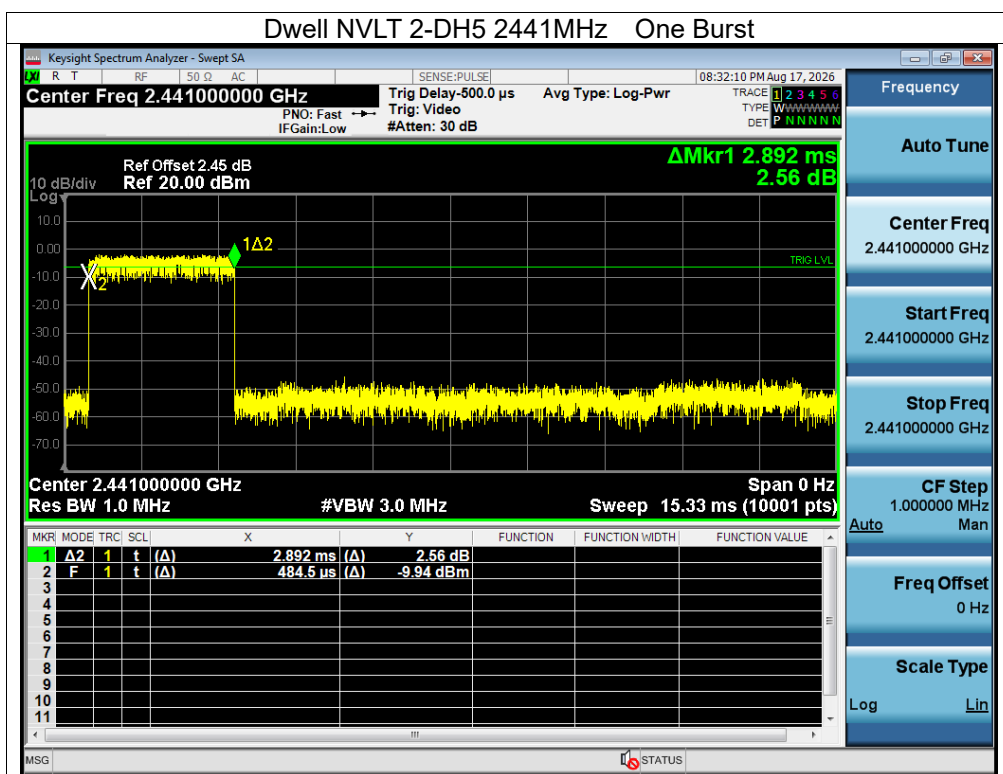


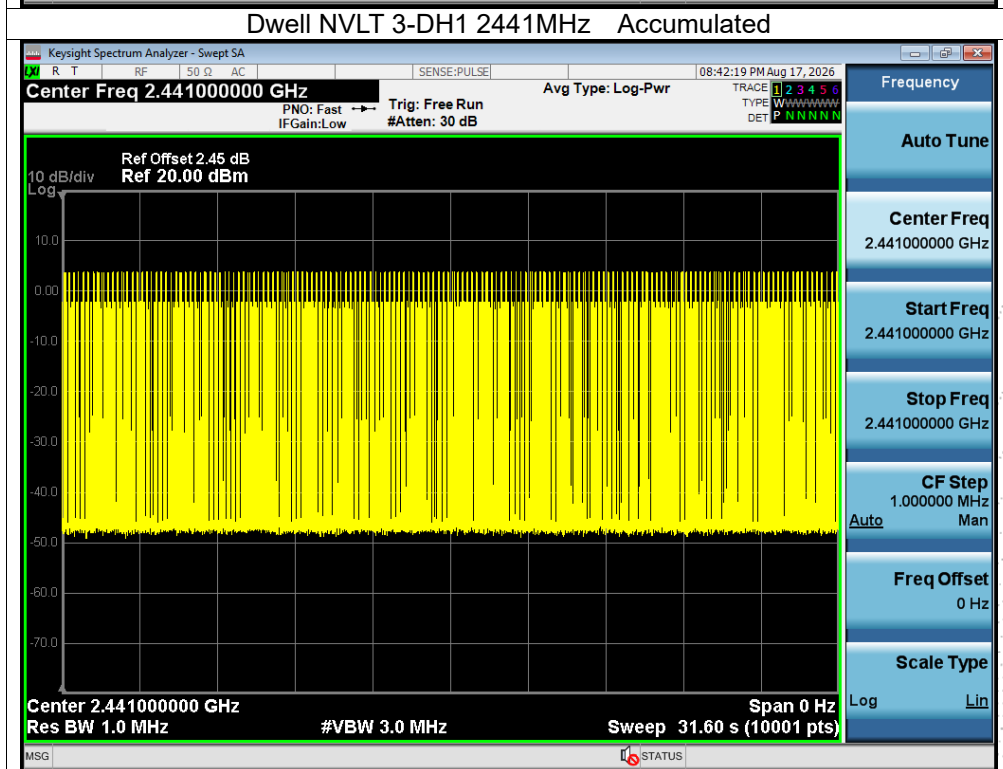
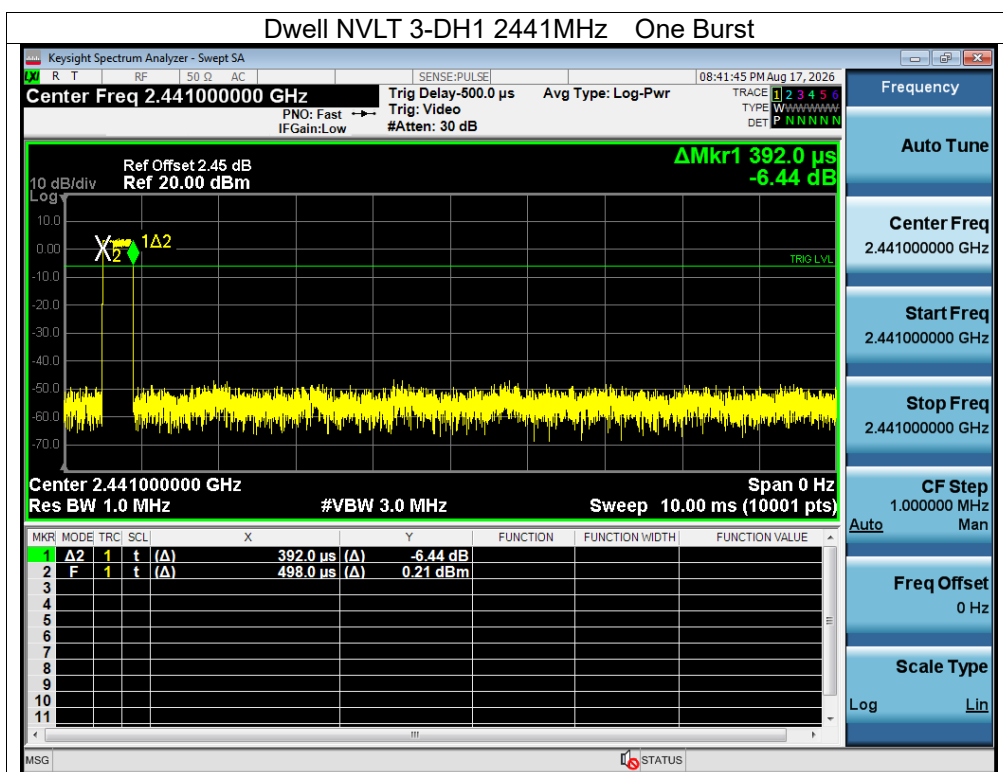


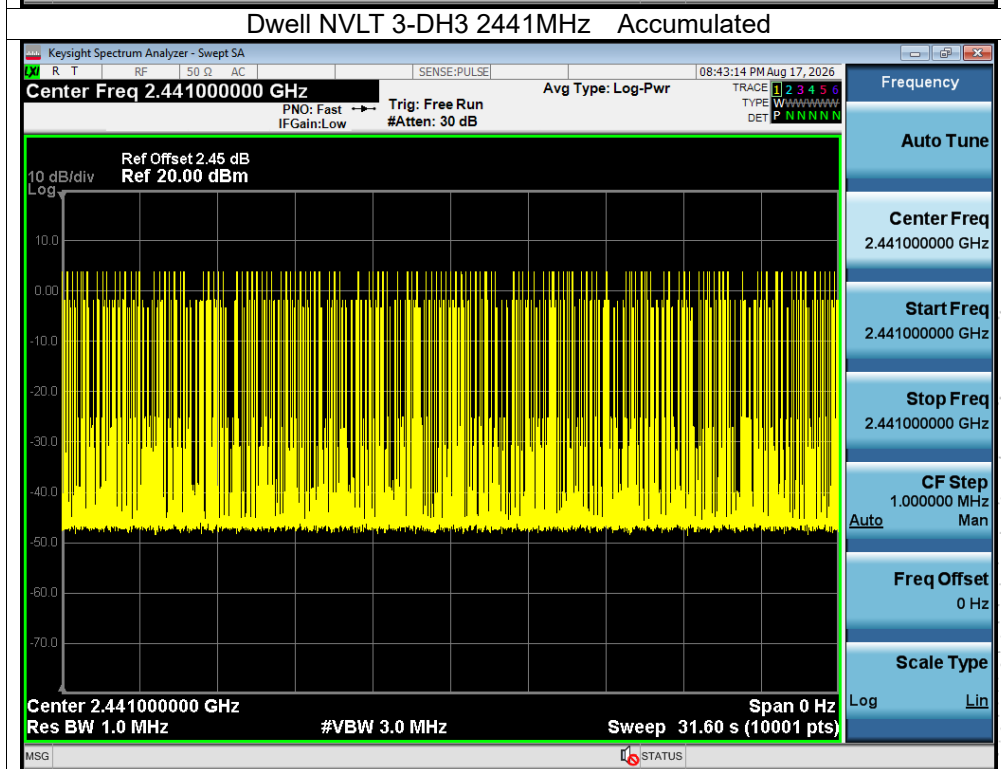
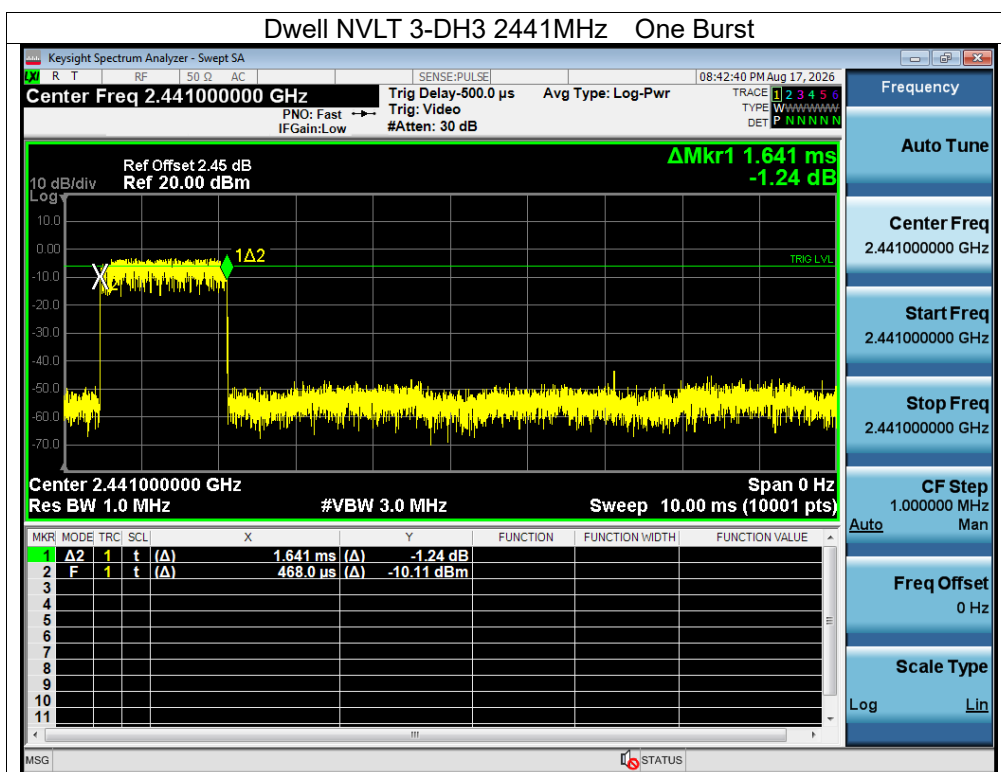


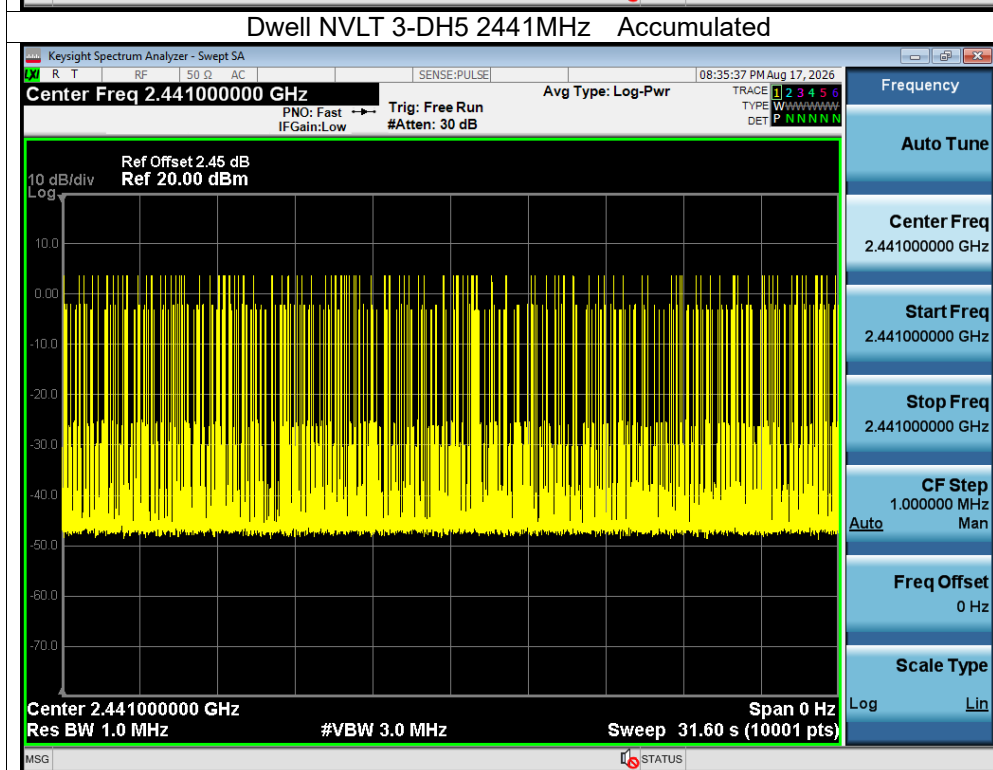
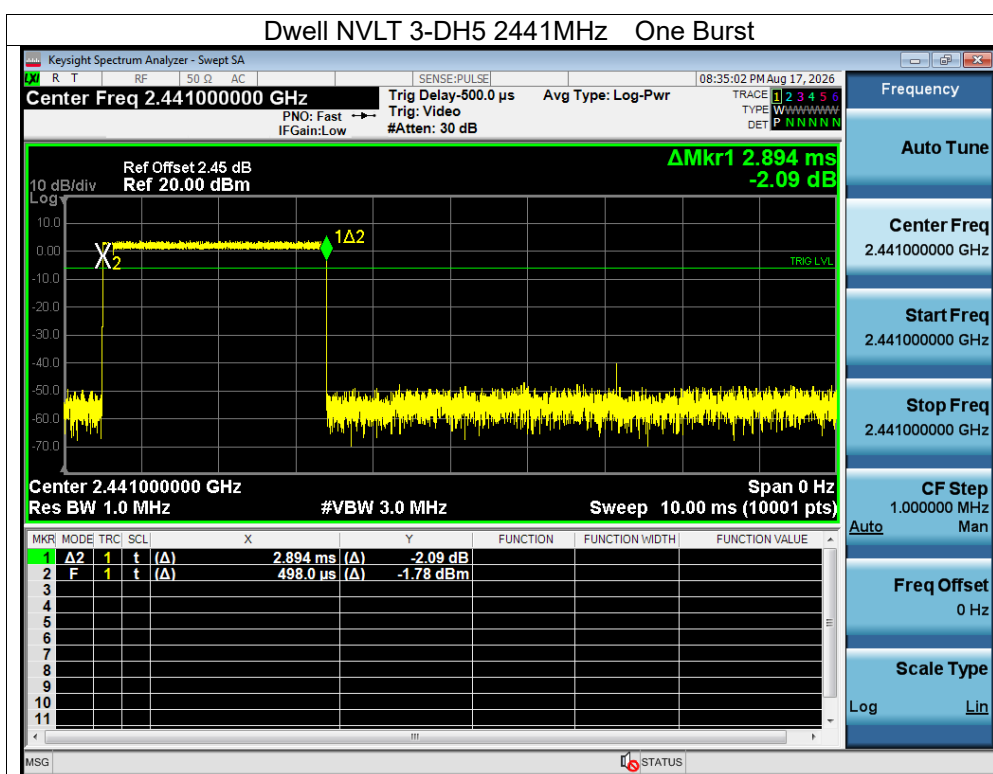


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15. Antenna Requirement

15.1 Limit

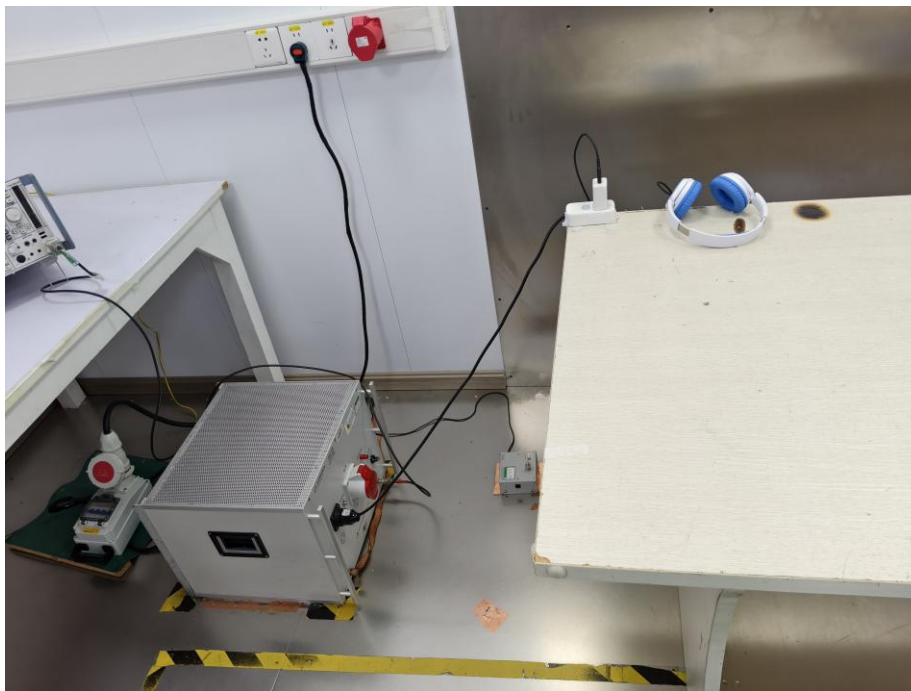
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

15.2 Test Result

The EUT antenna is PCB antenna, fulfill the requirement of this section.

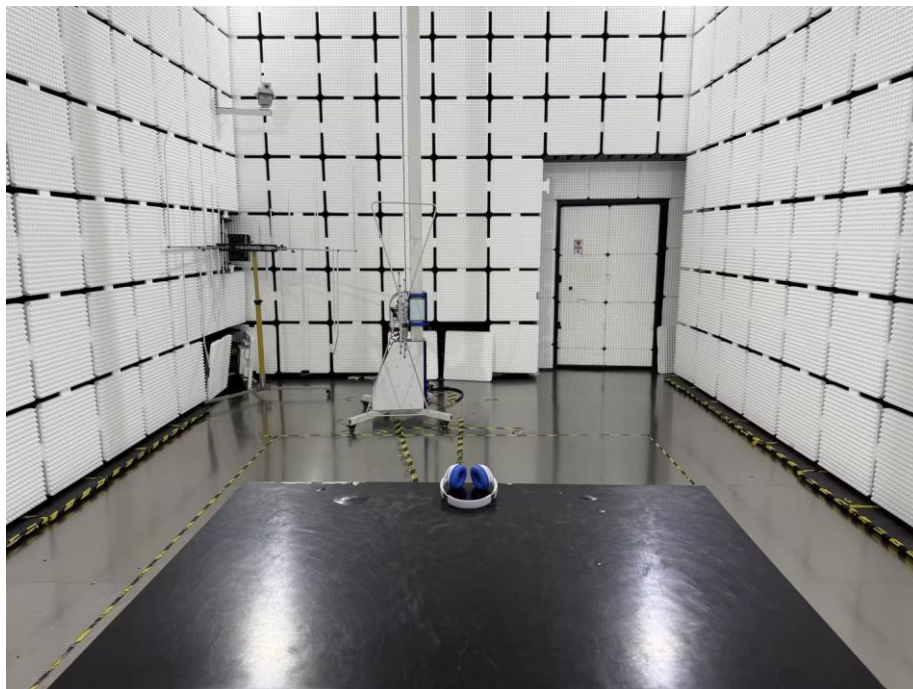
16. EUT Test Setup Photographs

Conducted Emission Measurement Photos



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Radiated Emission Measurement Photos



STATEMENT

1. The equipment lists are traceable to the International System of Units (SI)
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC 17025:2017.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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FAX:0755-33229357

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Complaint/Advice E-mail: advice@bctc-lab.com.cn

***** END *****